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CONTENTS

Educational Research: Concepts and Models	71
<i>G. R. Eastwood</i>	
A Study of a Public School System, Hessen, West Germany	84
<i>D. Friesen</i>	
Status Consensus as it Relates to Team Teacher Satisfaction	104
<i>M. S. Arikado</i>	
Student Perceptions of Teacher Pupil Control Behavior and Student Attitudes Toward High School	110
<i>W. Pritchett and D. J. Willower</i>	
Patterns of Learning Projects Among Professional Men	116
<i>C. A. McCatty</i>	
Reading or Listening: A Comparison of Techniques of Instruction in Elementary Social Studies	130
<i>Joan C. Breiter</i>	
List of Books Received	141

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Educational Research: Concepts and Models

The author of this essay notes and accepts that educational practice has not benefited sufficiently from research. He argues that educational research conceived as operational research has a refining and reformulating rather than a discovery function. A conceptual model designed to present research as a systematically formulated integration of theoretical—empirical—practitioner components is developed and explained. Use is made of an error eliminating procedure for the progressive development of educational ideas and theories. Implicit in the argument is the thesis that educational (and teaching) innovations do not arise from ideas that are inductively generated by research or practice—the function of these two activities is to structure and refine ideas prior to and during implementation. The ideas are the result of informed guesses or conjectures. Implicit too is a plea that there be adequate attempts to refine the ideas before large scale implementation is undertaken. The essay concludes with a brief statement about an appropriate form of organization for research units. (Dr. Eastwood is Professor in the Faculty of Education, Simon Fraser University, Burnaby.).

There is widespread belief, and probably ample supporting evidence, that educational practices and developments have not benefited significantly from the input of resources that, particularly over the past ten or fifteen years, have been assigned to educational research. Some argue that the resources committed both in terms of needs and in terms of comparison with other fields although large are inadequate. Others take the view that the problems are not resolvable through research and that the resources could be better employed in other ways. Some take consolation from the belief that educational research (in common with social science research generally) is in its infancy and that it is unreasonable to expect positive results at this stage. There are others who would simply argue that the research has been inadequately conceived, designed and executed. It is the case that a large proportion of the experimental designs used have been borrowed from other fields and used with little or no modification. Classical examples are to be found in the use of complex statistical designs developed for agricultural research (e.g. randomized block designs). All of

these reactions may have some validity but debating their causal relationship to the present state is a pointless activity and not pertinent to the purpose here.

Until quite recently educational philosophers have largely ignored educational research as a field of philosophical activity. In view of the very rapid and very significant development of the philosophy of science (with its several facets) during recent decades, it does seem remiss that educators and particularly educational philosophers have not turned their attention to educational research and its conceptual and methodological problems. Some work has been done recently. The publication of *Philosophical Redirection of Education Research* (1972) contributed very little. It has been reviewed elsewhere (Educational Theory, 1973) and need not be the subject of further comment here. *Philosophy of Educational Research* (Broudy, Ennis, & Krimerman, 1973) is a significant contribution and, additionally, a firm indication that philosophers have begun to examine the problems. The essays in Chapter 2 of that volume present points of view regarding "whether we should think of educational research as laying the foundation of a science in its own right, or should it be considered a search for ways of applying the findings of psychology, sociology, anthropology and other behavioural sciences?" (Broudy et al., 1973, p. 65). The main thrust of the chapter is therefore directed to the distinction between educational research as basic research and as applied or operational research. The consensus of these essays tends to be on the latter.

Additionally and more importantly there seems to be agreement that educational progress is dependent more upon what teachers do and how they do it than on any other factor. This has, as one contributor says, implications for the "theoretical level at which prospective teachers are trained" (Kerlinger, 1973, pp. 102-107).

In this article, it is argued that educational research is (a) primarily concerned with operational research, (b) a critical refining and reformulating rather than a discovering activity, and (c) a systematically organized joint philosopher-researcher-practitioner enterprise.

That we act or behave in any context in a manner consistent with the way in which we conceptualize that context has been well established. From this it follows that giving direction to an enterprise or providing redirection is not a matter of formulating and establishing rules but of creating a conceptual framework—a conceptual system that causes those within it to act appropriately. That is what this paper attempts to do; the reader must estimate the degree of success achieved.

Discoveries, innovations, developments or knowledge growth generally are seldom the specific result of research. We do not "do" research, discover something and then use or apply it. The belief that research or theory can be applied in practice or used to guide practice according to a linear model can be called the educators' fallacy. Neither the generation of new ideas nor the formulation of tentative solutions to problems is, in any field of inquiry, an inductive process. Nor do they occur as a result of deductive reasoning. They are not the result of logical processes in the usual sense of the term. They are for the most part what, in K. R. Popper's terms, can be called *conjectures*. They occur as alternatives to existing procedures with which there is either general dissatisfaction, or for which experience has

shown or tends to suggest they may be more appropriate. Generally they are imaginative conjectures which are formulated by individuals who are knowledgeable in the field and who have a "hunch" that some other way might be preferable and more effective. They tend to be conjectures in a weaker sense than their counterparts in scientific fields but there seems to be sufficient similarity for them to be called conjectures; e.g. the discovery method idea, the team-teaching idea and a host of others past and present. In advancing these, their advocates simply *conjecture* that they are or are likely to be more effective than those they displace. It is stressed here that they are conjectures and that they are not theories. At the same time it must be noted that theories begin as conjectures and these innovative educational ideas may be the seeds from which theories grow.

The second assumption or premise concerns the relationship between the knowledge available and the knowledge actually used in educational contexts. For example, in spite of the reservations we hold about its universal validity, there is available in psychology a great deal more knowledge about how and why people learn and the conditions under which learning is likely to be maximum than teachers are able to incorporate in educational situations. This is true for a wide range of areas in psychology, in sociology, in curriculum studies and others. Utilization of the facts known and the processes developed is largely a matter of chance and dependent upon the creative ability of individuals—individuals, be it noted, who are for the most part neither as carefully selected nor as highly qualified as they need to be to effect transfer to practice without aid; individuals who are required to work under constant day-to-day pressures in a practical endeavour and who are accorded little time for reflection before they have to act.

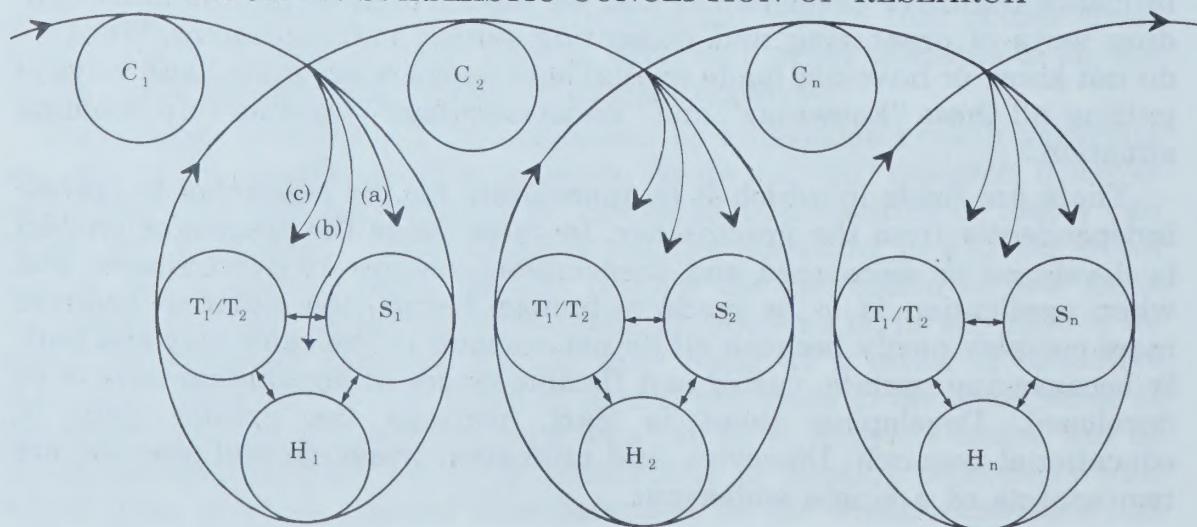
This is an extremely important factor which points out the need for the development of comprehensive factually oriented theories of teaching. Educators have too long laboured under the misapprehension that it is the function of theory to guide practice. By so doing they have deprived the teacher of the benefits from theory's role in accounting for the known facts and maximizing the likelihood of their being coherently assembled and systematically used. We do have available a great deal of information regarding the function of practice, of reinforcement, of motivating techniques, of curiosity. We also know a great deal about sociological factors that influence cognitive development and we have available information regarding ways of organizing and presenting subject matter content. What we do not know or have not made available to teachers are systematic ways of putting all these "knowings" and "understandings" together in a teaching situation.

There are fields in which it is appropriate for the researcher to operate independently from the practitioner. In these fields the process or product is developed or discovered and then made available to practitioners. But when application is to be made to human beings, the situation becomes more complex partly because all do not respond in the same way and partly because appropriate, varied and flexible modes of application have to be developed. Developing these is part, perhaps the greater part, of educational research. Discovery and utilization (research and practice) are two aspects of a single endeavour.

No one would wish to suggest or be accused of suggesting that a technological research pattern is an adequate or appropriate model for educational research, but there is one aspect that is worthy of consideration. Human learning and human development are considerably more complex processes than the development of a new machine. But both are practical activities dependent upon the application and utilization of basic research and both necessitate research in ways of applying. Consider the painstaking care with which a machine (e.g. a new and innovative design) is developed from the point of conception of the idea through careful analysis of the idea, through scale models of parts and of the whole, through prototype after prototype until the final product is produced. Then consider the extensive series of tests and modifications that both precedes and accompanies introduction to service. Then acknowledge that in spite of it all, faults and weaknesses appear—sometimes very serious ones. Contrast this long expensive process with the simplistic assumption that an educational innovation can be conceived and introduced (often on a very large scale) without the safeguards of carefully controlled trials of a series of prototypes. And yet we all know and admit freely that the processes of education are much more complex than those of technology. Out of this arises the theory that educational research is, or ought to be, an integrated activity involving the continuous interplay of the conceptual, empirical and practical dimensions. That, of course, means not only the integrated efforts of philosophers, social scientists, educational researchers and practitioners but the blurring of the distinctions and divisions between and among them.

Figure 1 is an attempt to represent diagrammatically a research and educational development model which is designed to conceptualize educational research, educational philosophy and educational practice as complementary processes. At the same time it is designed to facilitate a conception of educational development as having inseparable philosophical and empirical aspects—as being conceptual and empirical without separation and division of the two. No doubt it could have been formulated in terms of the disciplines and personnel to be used. It has been structured here in terms of the kinds of activities involved, but whether or not the right selection has been made is uncertain.

FIGURE 1. SPIRALISTIC CONCEPTION OF RESEARCH



The elements of Figure 1. need considerable and careful description and explanation. First, the symbols will be identified and given very brief descriptions.

- $C_1, C_2, \dots, C_n$ = Sequence or set of conjectures which may or may not be cumulative
 $S_1 S_2 \dots S_n$ = Systematic theoretical formulations derived from C
 $H_1 H_2 H_n$ = Triable or testable hypotheses exemplifying some aspects of or derivative from S
 $T_1 T_2 \dots T_n$ = Testing situations—empirically based but more often experiential trials than experimental tests.

At this point the model and the elements therein appear as a simplistic model, for the sake of a model, of a naive conception of scientific method. That it is not must be shown, and to begin, this will be done by considering the diagrammatic representation as a whole—or at least one cycle of it. Successive cycles are included only to show that this is not a final solution context. People and societies change and solutions satisfactory today are not likely to remain satisfactory tomorrow. Some of its characteristics have occurred accidentally and spontaneously (as ideas or conjectures generally do) and by so doing have provided an analogy that seems to aptly illustrate the concept and to enable us to see it as an organic whole.

Conjecture C_1 is an idea—a complex of many undefined and undifferentiated elements. It is external to but on a trajectory that leads into the loop containing S_1, H_1 and T_1 , which are interrelated and interconnected. The ideas or complex of ideas embodied in C are diffuse, undifferentiated and only vaguely specified. Any one or any group may become the germinal constituent that set in motion the S-H-T process. The analogy that is suggested is that of biological fertilization and growth. It is a good analogy because it implies a concept of S-H-T as an organic developing whole and not as a series of stages. Using such an analogy leads to conceptualization of C as seminal and containing a large number of elements only one of which may initiate the research and development process. Past observations of the exemplifications in practice of conjectures lead to the conclusion that we have not had a great deal more control over which element in C initiated development than we have over which sperm initiates cellular growth. For example there does seem to be an almost infinite variety of exemplifications of “discovery method” learning, all supposedly derived from the same idea or principle. What is done or created in the name of that principle depends upon the conception of it in the mind of the developer.

At this point the analogy breaks down because while it is not likely that under natural conditions any control over which sperm initiates development can be achieved this is not the case with the seminal idea C. If educational research is to be validly exemplified in practice by making an impact on practice then the first stage is that of conceptual analysis and re-synthesis of the conjecture that initiates it. This process is fundamentally philosophical but dependent upon the matrix of empirical concepts and empirical data. This is the process that determines theoretically what will count as an exemplification or application, and what will not count. It is important to note that the specification of those forms that do not count as exemplifications is the most important aspect and the one that has been

most neglected. This point must be stressed. The identification of forms of activity that are not consistent with the idea is of major importance because (a) it provides a safeguard against subjectivism, (b) it provides a context for critical argument, and (c) it leads ultimately to error elimination. Educational ideas (innovations) that fail do so because they are generally so broadly and vaguely formulated that they do not preclude the occurrence of invalid exemplifications.

The research cycle proper—the S-H-T cycle within the loop—is represented in the figure in such a way as to indicate an interconnectedness rather than a sequential order leading from S through H to T and thence into a new cycle. The refined versions of C that are the products of the process of conceptual analysis, clarification and synthesis may lead, as the diverging arrows suggest, to any point in the S-H-T cell. Arrow (a) refers to the simple state wherein a careful (though perhaps very demanding) analysis of C leads to the delineation of a set of elements which are systematically structured and ordered to constitute S_1 , or more likely a set $S_{11}, S_{12} \dots S_{1n}$. It is not likely that in a field as complex as this that one and only one S will occur. When this is the case and an S_1 set can be specified then the process of deriving H_1 or an $H_{11}, H_{12} \dots H_{1n}$ set can be realized. It is a matter of deductive logic but not in the sense of it necessarily being the case that a single H_1 is deducible from a particular S_1 . Nor is it the case that $H_{11}, H_{12} \dots H_{1n}$ are empirically testable in the strict sense of an experimental test. There may be H that are not empirically testable at all and it may be that such H have to be ignored. However the more likely outcomes are H that are testable either experimentally or experientially, or both. This is why in the description of the diagram of the model, T was designated as “testing situations”, not testable hypotheses.

To some degree, though undoubtedly not to a sufficient degree, the C, S and T aspects of the model are already in evidence. They are not sufficiently purposefully established and organized particularly in the tremendously important educational innovative development area, but they are there. We do to some degree conjecture, systematize and hypothesize. It is the testing situation aspect that most needs consideration and it must be separated into at least two phases or stages. This is important if the field of educational practice is, on the one hand, to benefit from research and on the other, to provide the context for refinement of the conclusions from basic research, i.e. become an integral part of the research process. Throughout the above, basic research, including research in fields such as psychology and the social sciences, has been assumed—it is part of the context out of which conjectures arise.

Experiential Triability

Two forms or categories of testing situations are necessary and normally, but perhaps not always, they run sequentially. Whether the initial conjecture C and the subsequent systematization S leading to some hypothetical proposition H is in the context of a specific research topic or in the broader context of a methodological procedure there is need for initial trial in an idealized situation—or one as ideal as possible. It may be and usually is the case that strictly controlled experimental tests cannot be carried out in educational research. There are too many variables that

can't be controlled and too many relations between them that probably can't be identified. But it does not follow that rigorous testing of a well formulated idea cannot be undertaken under conditions as idealized as practical situations will allow. A new teaching method or an educational policy like a new type of machine must be useable and effective under ordinary service conditions—by ordinary teachers in ordinary teaching environments. But those teachers in those environments can no more carry out the initial trials than can an ordinary airline pilot discharge the specialized duties of the test pilot. Educators and educational researchers have failed to see this and as a result have attempted to move from conjecture to practice without the aid of the intervening stages. Providing those stages necessarily implies conceptualizing the research and development process as a complex whole and making positive provision for the necessary stages. The moves from C through S_1 to H_1 are largely but perhaps not wholly logico-philosophical, but T_1 are predominately empirical though admittedly not experimental in the strict sense.

The T phase operates at two levels T^1 and T^2 . The first, T^1 , and ideally speaking it is temporarily foremost, is the "as near as possible" ideal situation in which the hypothesized process or procedure is tried out under conditions as carefully controlled as possible. These are not likely to be truly laboratory conditions but they are carefully designed, staffed and organized environments that maximize to a very high degree the probability of the process or procedure being tested being consistent with the S from which the T has been derived. They may be either specially selected or specially designed environments (classrooms, schools, workrooms etc.) into which specially selected personnel are directed. They are designed to produce situations that coincide closely with the requirements of the H that is under consideration and hence to maximize the probability of confirmation. But if designed or allowed to do only that they will contribute little. The whole purpose of the exercise is to refine H, and hence S and C, and that purpose will not be attained if H is made or shown to work. Some have argued that in educational research it is not possible to formulate a falsifiable hypothesis. This is not the case. The history of educational practice is a chronology of innovations and renovations introduced with enthusiasm and confidence, maintained for periods of varying lengths and eventually either deliberately rejected or discontinued because they have fallen into disfavour. That is falsification but falsification after full scale utilization which is akin to the withdrawal from service of the inadequately tested airliner after a series of fatal accidents. (Generally the airliner is returned to service after modification—the educational counterpart tends not to be modified but to be replaced by another equally untested area or innovation.) Unfortunately the fatal accidents of educational innovations are neither as easily detected nor taken as seriously as are airline accidents.

If as a result of T^1 (a single test or trial in a near ideal situation) T is accepted there is need for caution. The tendency for educators to rush the move from conception (conjecture) of an idea to implementation is widespread. The proposal to introduce an ideal situation trial between the two will achieve little unless at least two concomitant conditions prevail. First T^1 cannot in educational research be a crucial test. Extensive replica-

tion is essential and the fact that identical replications are not possible is an advantage, not a disadvantage. Only to the degree that T can be subjected to a range of different, but equally ideal trial situations as to design etc., will the weaknesses be revealed and the H refined and modified. There has been neither test nor trial unless H has been modified in some way. Second, T^2 which is the beginning of practical utilization cannot be condoned until substantial progress at the T^1 stage through a series of replications has been made. We need to think in terms of a series $T^1, T^1_2, \dots, T^1_n$ and advance to T^2 only when n is deemed to be great enough to justify generalization of T^2 . This necessitates restraining the enthusiasm of innovators and that is not likely to be readily accepted by most practitioner theorists.

Perhaps the most important (certainly the most neglected phase) of T and of the model as a whole is the non-ideal situation phase which, for simplicity, is designated as T^2 . Any technique, method, appliance, or machine has value proportionate to its validity or usefulness under normal operating conditions. The airliner that can only be operated effectively and economically by specialized personnel not available under *normal service conditions* is of little value. The educational innovation that can only be made to work effectively with *highly specialized personnel under ideal conditions* is of little value. Again we should note that the history of educational method from the critical questioning techniques of Socrates to the freedom of A.S. Neill is a source of examples of innovations introduced because they were highly successful in the contexts created by their developers. The same history reveals that in the hands of others they proved much less valid. About this at least two things must be said.

First there is a sense in which it probably is the case that there is a subjective personality related dimension to the teaching and the educating act. It follows that if this dimension is such that its retention is essential to the success of the act then that act cannot be performed by others unless that dimension can be developed or translated. Therefore one of the main tasks of both T^1 and T^2 is to determine (a) if such dimensions exists, and (b) if they can be developed by or in others. If (a) is established and (b) is not achieved then the innovation must be rejected as being inappropriate for general use. What might of course be done would be to identify the traits necessary and the personnel who exemplify them and confine its use to such personnel. One might note parenthetically that techniques such as team teaching are not effective with all teachers.

Second, there is a large number (probably the majority) of cases where there are no necessary unique subjective personality traits, but it does not follow that no modification of post T^1 versions of H_1 are required. The determination of the form and extent of these modifications is partly the concern of T^1 but more the responsibility of T^2 .

The research phase T^2 is conceived as a form of action research—research carried on by practitioners in their day to day practice—and at least some educators today are advocating encouragement of this type. For reasons which, directly or indirectly, have been referred to in the foregoing, there is a case to be made. Certainly a very strong case can be made for research in the classroom by those responsible for the classroom as a means of disseminating research findings to the classroom. There are com-

plex problems as well as other advantages that are worthy of consideration. The problems fall into two general categories: (i) the lack of adequate facilities and skills by classroom personnel, and (ii) the related problems of conceptual orientation of these personnel. The solution to (i) involves considerable training and selection. The solution to (ii) is even more complex. In any practice—medicine, law, engineering, teaching, etc.—it is not realistic to expect the practitioner to be conceptually oriented toward research to the degree necessary for sustained independent operation.

The aspect of educational research that is of concern here is that which has a direct bearing on educational development in the context of teaching and learning styles and strategies. It differs significantly from any form of research the end product of which is cognitive in the “knowing that” sense. Basic social and educational research are concerned with getting to know the characteristics of human learning and human development. Our concern is getting to know how to most effectively incorporate and use basic knowledge but it does not follow that basic knowledge will not accrue.

The remarks in the foregoing description of the model were identified with arrow (a) in the diagram. They have therefore followed sequentially through S, H and T^1/T^2 in a logical order which is too much akin to a simplistic interpretation of that nebulous thing called scientific method. Arrows (b) and (c) are incorporated to indicate awareness that this order may not be valid or viable. One can readily conceive a host of situations wherein hypothetical H_1 or T_1 moves may be necessary before any progress with respect to systematic organization of the allowable elements of a conjecture can be made.

The dual direction interconnecting arrows among S, H and T are designed to indicate the intrinsic relatedness of these aspects. One might think of the whole unit as tri-cellular with each cell developing in part independently but not without relatedness to the others. The biological fertilization analogy may not be inappropriate particularly if one considers the separate cases of S, H and T being either separately energized or the results of a single energization and subsequent splitting.

Conjecture and Refinement

The Popperian principle of conjecture and progressive refinement of the initial idea is inherent not only in the C phase but in the whole model. A slightly more detailed consideration of that principle is necessary but first of all one point must be made. Karl Popper, operating in the context of critical epistemology specific to scientific discovery and set upon the task of eliminating subjectivism, can meaningfully speak of refutation. His is a context in which hypotheses, in principle at least, can be formulated with sufficient precision (riskiness) and measurements and experiments carried out with sufficient accuracy and control respectively to make refutation a feasible thesis. But even so, such refutations are seldom achieved and it is noteworthy that Popper, in later formulations of the principle (1972a, p. 121), refers to error elimination rather than to refutation.

Popper's clearest formulation of the principle is expressed in the formula

$$P_1 \rightarrow TS \rightarrow EE \rightarrow P_2$$

where P_1 is the initial problem, TS, tentative solutions, EE, resultant error

there exists a real function and a real place. The second arises out of the first. The positive assignment of a function necessarily implies availability of personnel qualified to perform. At this time due partly to the inadequacy of practitioner preparation programs and partly to their subsequent non-involvement in, and isolation from research, few practitioners are qualified. Those that have shown interest and become competent have "graduated" from the practitioner role. From this it follows that the organization of research and the design of its venue must provide means for extension of practitioner competency in a way that does not lead to the cessation of their performance as practitioners.

This can be achieved by applying the cyclical concept of the theoretical model to the staffing pattern of research centres. Research centres can be conceived as the nucleus as to both function and personnel. This means that they will house permanently only the facilities that are specialized and require a permanent location (computers, libraries, etc.) and those personnel who are specialized (programmers, statisticians, theorists, technicians) and who contribute to the centre's activities in a wide range of projects.

The key to facilitating the capacity of research to influence practice significantly is the T^2 stage. Its integration into the research program can be achieved by organizing continuity of research activity and teaching practice. This can be done, the writer submits, by seconding selected teachers to work as researchers in research centres during the T^1 phase of a project. Upon completion of an appropriate period of secondment determined by the progress of the project or by the competency of the seconded teacher-researcher, they would progress to functioning in the project at the T^2 stage. This procedure opens the way not only to the development of test by trial in ordinary classroom situations but also to the development through inservice training of competent teacher-researchers.

The effectiveness of short term secondment of teachers to engage in teacher education program on a basis operationally equivalent to permanent faculty has been well established at Simon Fraser University. The administrative pattern developed is readily applicable to research activities and the benefits to be derived by teachers and by research may be very great. At the very least the scheme will locate in schools and classrooms a nucleus of research oriented teachers. As such it might be viewed as a valuable form of inservice education.

One final note must be made. Research activity is not facilitated by static organization or conceptualization. It may well be the case that the most productive research unit is one in which not only practitioner but also the more narrowly technical personnel are seconded for short terms and caused to flow into and out of other areas of activity.

Educational Research: Concepts and Models

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D. FRIESEN

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A Study of a Public School System Hessen, West Germany

This paper summarizes some of my findings on the organization and administration of public education in Hessen, West Germany. The data, collected during a four-month period, resulted from visits to schools, interviews and examination of documents of various kinds.

The positive characteristics of public education in Hessen are readily apparent to the visitor. Among others they are the strong academic basis, the early writing and reading programs, the emphasis on excellence, the pragmatic vocational programs, and the development of responsibility among students. The focus of this investigation is only peripherally on these characteristics; it is mainly on the organization and administration of public schools, and on proposed changes in these areas.

To achieve these objectives the paper reviews briefly the historical background of public education in Germany, then discusses the current educational structures in Hessen. This is followed by a more detailed analysis of the administrative structures in the West German state. The final section of the paper deals with educational reform in Germany, both in terms of objectives of the reform and in difficulties encountered in the realization of desired changes. (Dr. Friesen is Professor in the Department of Educational Administration, The University of Alberta.)

Historical Perspective

A brief reference to the historical development of education in West Germany is essential in order to comprehend more fully the complexity of current educational problems in that country. There is a proud tradition, as in the case of most European nations, lodged in the Gymnasium, the humanistic and scientific curriculum, the exclusiveness of certain schools and universities, and the customs and practices related to each of them.

Control of Schools

In early days, schools were predominantly church controlled; priests and monks were the undisputed decisions makers in educational matters. According to Butts (1955, pp. 199-201; 359-364) a long period of controversy,

dating back to at least 1598, raged, during which time the state gradually assumed more and more control over schools. General formulas were thus developed which resulted in more specific laws such as the one in Prussia (1794) which stated that schools and universities are institutions of the state and that all public schools and educational institutions are under state control. But throughout the nineteenth century the state control of schools did not fully materialize. Even after the externa had been absorbed by the state, it took decades before the interna were removed from church control.

It is no wonder that, when after the first World War, the complete break was to be made toward a state controlled democratic school system the change could not be effected immediately. Many influences lingered on and these became powerful forces when change was perceived to threaten the traditional educational system. Many of the organization arrangements and school practices in German education can be traced back to the revolutionary change in education accomplished in the Humboldt era. In many quarters, German educators, politicians, and students are questioning the appropriateness of an educational system from a previous century in a time when technology has affected almost every aspect of life.

Control of Curriculum

Traditionally, curriculum was a matter for the priests, monks and scholars. The classics, religion, languages and mathematics were the undisputed disciplines for the students in the Gymnasium. Later the sciences were grudgingly admitted to occupy a small part of the curriculum.

In spite of changes in technology, social order and ideologies, the curriculum of the Gymnasium follows its traditional course. The state may control the decision making processes, but it does not or will not interfere with the interna of the schools. De facto curriculum decisions are still made outside the arena of student, parent, or state activity. Just as in England, the teacher in Germany is free to make many curriculum decisions. But in actual fact he makes few that are not those handed down to him. Conformity lies not in the law but in the historical precedent or tradition.

Pressures on the Schools

Following the period of idealism during the early nineteenth century, Germany experienced a reaction that slowed the progress of school development. However, the basic structures of the schools were established. The pressures of an industrial nation became more noticeable. Vocational schools received much attention and these gradually became important educational institutions in Germany.

The German school system, perhaps because it never completely severed its church connection, continued to feel the influence of ideologies. This influence appears to have increased dramatically of late. Together with this development have emerged hopeful signs of a reawakening of the importance of education in a democratic nation.

Critics of German education are voicing concerns that control of schools is ambiguous and probably results in inefficiency and uncoordinated planning, that administration of schools is bureaucratic and unplanned, that curriculum of schools is accepted uncritically, that in content of courses, in-

dustry and society are greater determiners of education than the individual, that education, emerging as one of the most important concerns of the state, is refusing to change its century old orientation to organization, control and development, and that current structures in education retain the elitist tradition and as a result disregard demands for greater equality of opportunity.

An international study (Husen, 1967, p. 114) of twelve countries sought to document the relationship between school structure and the degree of equality of opportunity in education. An index of the proportion of middle class children in schools was developed; the larger the index the greater would be the proportion of students from the middle classes during the years of schooling. The larger the index the more unfavorable was the school organization to the working class children. The index showed that for mathematics students the U.S.A. (1.9), Sweden (2.1), Israel, Belgium (3.6), Australia (4.7), Japan (6.0), and Finland (6.0) had the lowest values. The three with the greatest values were England (16.2), France (17.3), and West Germany (45.3).

Clearly, according to these findings, countries with comprehensive schools have attained much greater equality of educational opportunity than those with a tiered system, where streaming of students is practised. The study also showed that the comprehensive schools were more efficient in that they led more students to successful completion of high school, without any loss in performance of the top students. Similar results have been found in recent IEA studies (Tanner & Tanner, 1974).

Current Educational Structures in Hessen

Schools

The following descriptive summary of the Hessen schools is based on personal visits, inspection, interviews and publications by The Bildungskommission des Deutschen Bildungsrates (West Germany's Education Commission) (1970, 1973), Hauke (1970), Roehrs (1969), Rolff (1970), Hentig (1970), Brock (1972) and others.

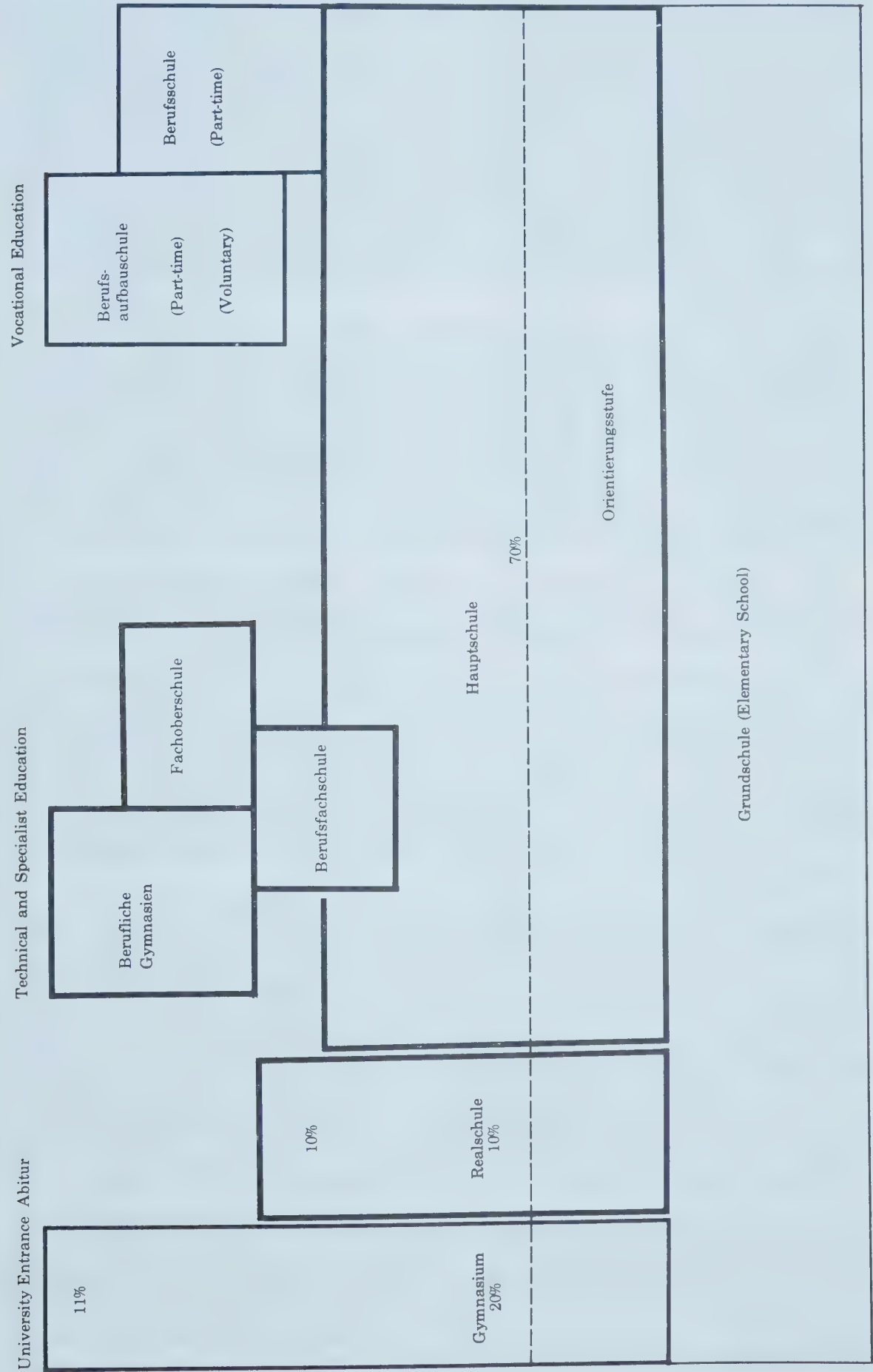
(a) *Vertical Structures.* (Figure 1) The basic elementary school in Hessen, as in other German states, is the *Grundschule*.

Since 1918 all children regardless of background or social class must attend this school for four years beginning at age 6. This school was designed to break the educational monopoly of the rich or elite, and lead to a democratization of education in Germany, and to greater equality of educational opportunity.

Brock claims (1972, p. 20) that the aims were not achieved for all children and that the inequality was merely veiled. The National Socialists did not change much in education except to remove the confessional nature of the schools. After the second World War no reform set in, except the restoration of the confessional or religious program and the deletion of the Nazi ideology. The manifest goal of democratization still plays a secondary role to the latent goal of selection.

Following the four years of comprehensive schooling the majority of children are streamed into the *Hauptschule* a five year secondary school. The students are mostly those of the working class, who are at this early

FIGURE 1. THE SCHOOL STRUCTURES TODAY—HESSEN, WEST GERMANY



stage clearly differentiated from the other classes. Many writers and educators claim these are the weakest schools in the system attributing this weakness to curriculum, teacher qualifications, high student-teacher ratio, and the low esteem held for the Hauptschule leaving certificate.

About ten percent of all students are streamed into the *Realschule*, a school designed to prepare students for middle to higher occupational levels. The curriculum is a mixture of practical and theoretical activities defended by industry and by Realschule teachers who are afraid of losing their somewhat higher status than that of Hauptschule teachers (Brock, p. 27). The school stands between the Hauptschule and the Gymnasium, and thus obtains support for its existence since it helps to enhance the status of the Gymnasium.

About 20 percent of all students enter the *Gymnasium* (Deutscher Bildungsrat, 1970), the elite school in the system, and about 11 percent complete the *Abitur* (Brock, 1972, p. 29). Boys are overrepresented; the working class is seriously underrepresented. Entrance is based on the recommendation of the Grundschule. The curriculum is strongly oriented toward languages, mathematics, and science. The *Abitur* leads to university or professional training. Evening schools both for the Realschule and Gymnasium are provided for students who wish to move toward the *Abitur* on a part time basis.

The schools of Germany are clearly differentiated, following the Grundschule, into three distinct and separate streams. The single educational ladder ends after the fourth year of school.

(b) *Early Selection*. One very obvious barrier toward democratization of the school system is found in the early streaming of children. Some parents, even before their children attend school, have their children drilled to "Make the test." During the Grundschule the democratization aims are subverted with the overarching fact that a decision is pending which will determine to a large degree the life-style of the child. The German mind seems to be able to live comfortably with this educationally questionable practice.

(c) *Curriculum*. Most educational books in Germany that discuss curriculum tend to focus primarily on that of the Gymnasium. This curriculum is viewed generally as untouchable. Every child must study languages, especially Latin and one or more of French and English. In the Hauptschule the curriculum is more practical and job oriented, while that of the Realschule is both practice and theory oriented. A very recent development in the Hessen educational scene is the re-writing of curricular guidelines in terms of educational objectives. The *Rahmenrichtlinien* (curriculum guidelines) have generated considerable interest and debate in various arenas particularly the political. As an example, a six hour marathon panel discussion was shown on television on the subject.

(d) *The School Day*. The half day school from 8:00 a.m. to 11:30 a.m. for the Grundschule and from 8:00 a.m. to 12:30 p.m. or 1:00 p.m. for upper years is still defended and practised widely. This means that children always have homework, and recitation occurs in school. There are some suggestions to change to a five day week with a full school day which might permit new modes of instruction and which would be in harmony

with the five day work week now becoming general in Germany. But the change seems too threatening to teachers and Schulraete (administrators) and even to parents.

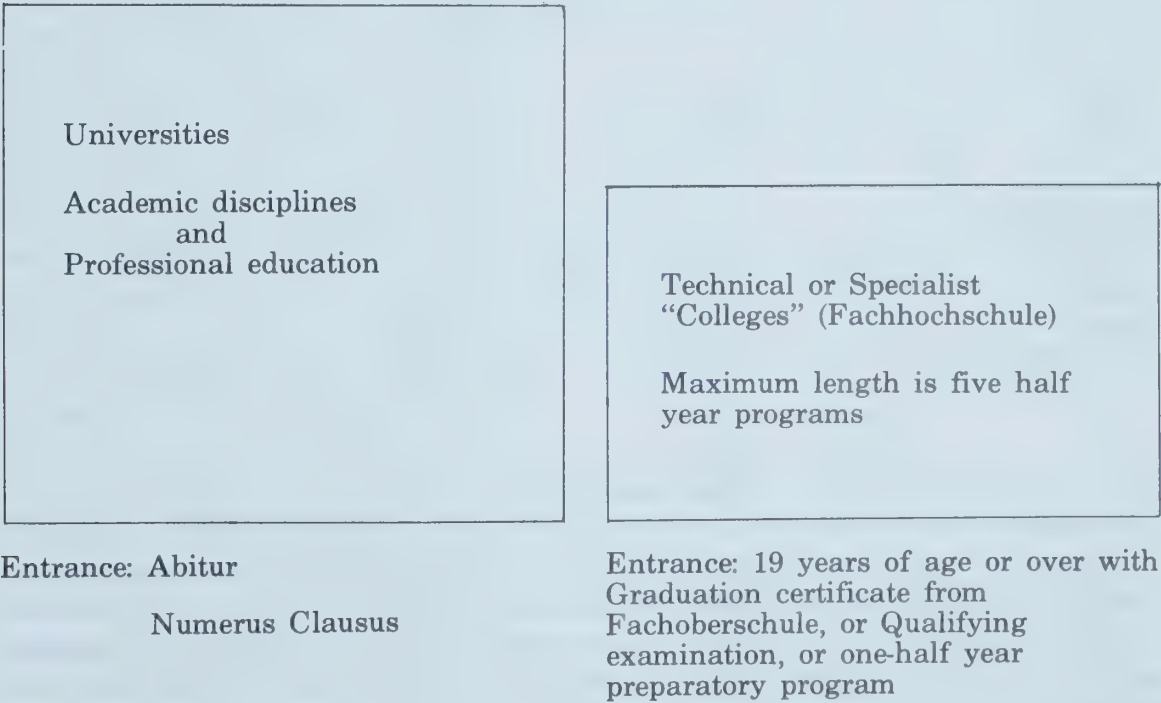
(e) *Abitur*. From early schooling German education is Abitur dominated. Abitur refers to the successful completion of examinations following Gymnasium. It is interesting to note that most German critics of education refrain from attacking the institution of Abitur. Hentig (1970, p. 179) comes close to it when he advocates several changes in the Abitur. The institution is deeply imbedded in German thinking—"Doch!" "Ja, Ja, so ist es doch." "Natuerlich", "Eben." For an outsider the Abitur represents symbolically the essence of the elitist tradition in German education.

Higher Education

Figure 2 summarizes briefly the educational opportunities open to German students beyond the Gymnasium or beyond the Fachoberschule or Berufsgymnasium (See Figure 1). Recently Numerus Clausus has been added to the Abitur in the selection of university students. In 1973 only 15,864 West German students out of 52,177 were awarded a place for the course of study of their choice (The Times, 1973, p. 9).

FIGURE 2. HIGHER EDUCATION—HESSEN, WEST GERMANY

State examinations for teachers
conducted by Department of
Education following 4 to 6 years study

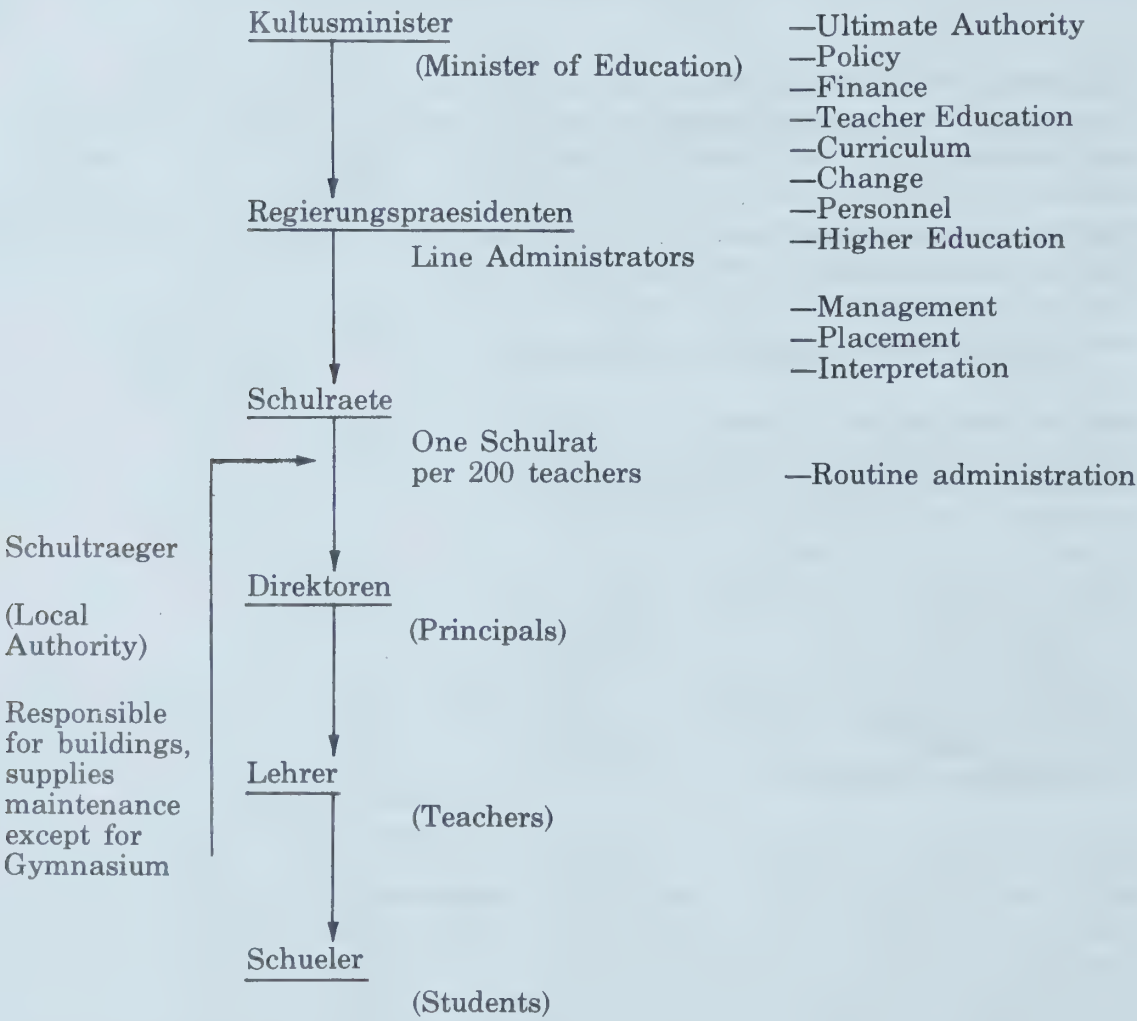


Entrance to the Fachhochschulen is possible for students at least 19 years of age who possess a Hochschulreife certificate (See Figure 1). They can also enter by passing an entrance examination or complete a half year preparatory course.

Administrative Structures in Education

With the long history of gradual development of the present school system, complicated and varied administrative structures have developed concomitantly. The following descriptions, inadequate as they may be, may help to provide an understanding of the processes of governance in German education. The sources again are from the references mentioned and the interviews held with various officials and researchers.

FIGURE 3. ORGANIZATION FOR SCHOOL ADMINISTRATION IN HESSEN, WEST GERMANY



Figures 3 and 4 provide an oversimplified picture of the administrative structures. In Parsons terms the Kultusministerium (Minister of Education) would represent the institutional or political level. The next three positions would be the management or administrative level, while the last three positions would be the operative level.

A number of additional institutions or organizations are influential and/or operative in education affecting the work that is done at the operative level, the routine of the management level, and the policy at the political level. Five of these must be elaborated upon briefly to make the presentation of school administration more representative of the actual processes as they occur.

FIGURE 4. SUMMARY OF INFLUENCE ON SCHOOL ORGANIZATION AND ADMINISTRATION IN HESSEN

West Germany—

no constitutional rights in education yet “de facto” influence is felt through recommendations, participation, financing of higher education, and control of vocational education.

In addition, four super regional educational bodies exist. They are limited to recommendations.

1. Standing Committee of Ministers of Education for planning, coordination and exchange of ideas.
2. Commission on Educational Planning.
3. The West German Education Commission—conceptualize.
4. “Bundesministerium” for Educational Science—research.

Parent Councils

- Input possible at all levels
- No authority for decisions

Teachers Councils

- Have authority for decisions at school level
- Not used frequently

Student Councils

- Input possible at school level
- No authority for decisions

The Federal Republic. The federal government of West Germany has no constitutional rights in education; the rights are vested in the state (Land). Yet “defacto” influence occurs in several ways. First, it derives from the overall policies pursued by the West German government and by the rights guaranteed by it. Among these latter are the guarantees that everyone has the right for his free personal development (Bildungsrat, 1970, p. 25), and the right of a free choice of occupation. Second, it exerts influence by recommending or supporting recommendations in education. Third, it actually participates in planning commissions, and finally it contributes financially to higher education and to research institutes.

Specifically, there are four super regional educational bodies that influence state decisions in education.

The Standing Committee of Ministers of Education is involved with planning, coordination and exchange of ideas. The Commission on Educational Planning is composed of representatives from the states, and also from the Federal Republic. The German Educational Council is another body engaged in conceptualizing educational plans. Finally, there is the Federal Ministry for Educational Science which is engaged in research and development. All of these bodies can only recommend action or policy to the states, they cannot go beyond. Their recommendations are widely disseminated and are influential.

Schultraeger. (Local authority for buildings and supplies). The provision and maintenance of school facilities, equipment and supplies is vested in a local authority. These authorities can be cities, divisions or county-like units. The Schultraeger vary for different parts of the school system. In general the Schultraeger for all public schools are local authorities, but for

the Gymnasium it is the Kultusministerium (state department of education).

A school director is thus subject to a dual authority. For staff and policy problems he contacts the Schulraete while for material problems he contacts the Schultraeger. In some places like Frankfurt am Main the Schulrat is responsible to the Kultusministerium for the interna (staffing, program) and to the local authority for the externa (buildings, supplies).

Parents. Parents have their own formal organization which can act as a lobby at any level of the hierarchy. The parents can thus discuss problems of curriculum, teachers, schools, governance or policy. The decision-making is outside their prescribed rights, theirs is influence alone. The effectiveness of the influence is clearly related to the person not the position. Recently some of the "Landeselternbeirate" have exerted considerable influence, and the minister is using this structure to involve parents in discussion and decision making on curricular matters.

Teachers. Teachers have by law the right to determine a number of matters through the *Konferenzrecht* (rights granted by law). However, this is not used too much and teachers, as a result, may be influential mostly at the operative level. The fact that teachers are civil servants, and their progression up the hierarchical scale is determined in part by their superiors may deter them from aggressive participation in decision making.

Teachers are also active through their own associations which generally tend to support innovative thrusts in education. The actual effort is carried out through publications, workshops and cooperation with the minister in innovative programs.

Several obvious difficulties make the work of teachers' associations less effective than could be expected. First, only about one-third of Germany's teachers are members of the Gewerkschaft (teachers' association). Even though the membership is increasing, it will take time before the association (union) can speak effectively for teachers in Germany, and until such time the major thrust of the association may have to be with teachers rather than with policy makers. However, the leaders of the teacher associations are moving into the politics of education, and since they don't appear to be in conflict with the minister on many issues, may exert some influence.

Another difficulty is related to the historical development of teacher education in Germany. Teachers of the Gymnasium have received their education in universities and have continued to maintain their own association (Philologenverband). The members of this association are more inclined to resist changes in educational structures and curricula. They tend to have close ties with universities and university graduates who find their way into politics, law, or other influential positions. Many of these also move into middle management positions or higher education and thus are involved in the political arena and decision making processes. Teachers of the Hauptschule and usually of the Grundschule were until recently not university educated. This cleavage, even though all are university trained now, still creates communication problems and, probably more serious problems of conflicting goals, values, and priorities.

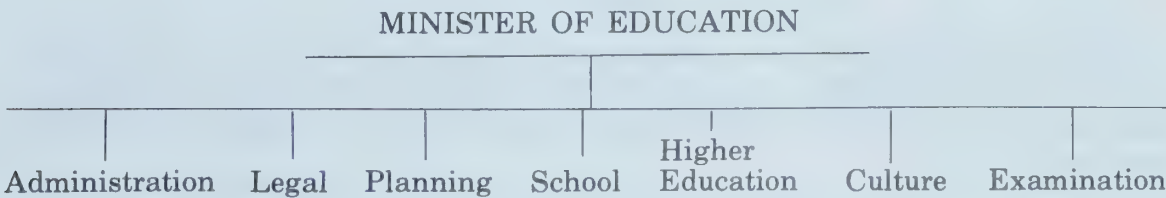
The third concern about teacher influence relates to the way that

change and innovation have become linked to the radical or leftist teacher. This tendency has resulted in a polarization of opinion where one group wants to change slowly, carefully and according to goals and plans, while the other wants to move rapidly to replace what in its words is an “im-moral” system. This polarization has helped to slow down meaningful change. There are a few educators and politicians who are making themselves credible by avoiding the association of extremists and building their cases for change on rational, empirical and humanistic grounds, almost free of ideology or reaction. Though these are in the minority, they represent a promising thrust in German education.

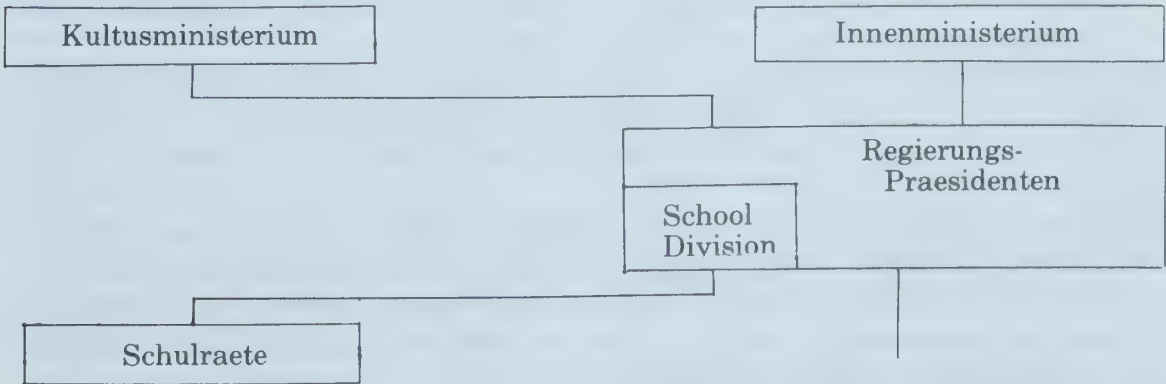
Universities and Research Institutes. By their own admission, members of the educational and research institutes have minimal direct influence on educational reform. However, both theory and research are actively in-jected into the educational discussions at all levels by these institutions and thus they may make significant contributions. In addition many university professors, researchers, and writers are actively involved in educational reform proposals. There are indications though that educational reform will result more from political moves than from educational theory and research. It is also interesting to note the com-promises researchers seem prepared to make especially in comparative research. They are always ready to state that Germany must avoid the errors made by other countries, that is why they pursue research in other systems.

The basic line sketch of the administrative structures for education in Hessen, West Germany as seen in figures 3 and 4 shows the numerous in-fluences on the decision making processes that occur.

The Kultusministerium has the ultimate authority in education. The minister and his staff are responsible for policy, for finance, for change and innovation, for curriculum and examinations, and for legal and ad-ministrative matters. At the highest level the Kultusministerium is struc-tured something like the following:



A confusing structural aspect occurs in connection with the Regierungs-Praesidenten as shown below:



Research has shown that jurists are represented fairly strongly at the higher levels of the administrative hierarchy (Muller, Vogelsand, & Bessoth, 1973, p. 76). Some 40 percent of the top educational officials are from the legal profession.

The educators at the top level arrive only late in life and thus may come with a bureaucratic career orientation rather than a creative desire for change. The lawyers, on the other hand, come equipped with legal ideas and are probably less interested in educational reform than in maintaining an efficient and traditional system of education.

This brief sketch illustrates the complexity of the administrative structures in German education. The analysis can easily lead to questions on efficiency, planning, accountability, supervision, and motivation in the system.

The rationalization of the administrative structures seems imperative. One way would be to study the functions at each of the three administrative levels and to examine ways in which the structures could be reordered for the improvement of the system. During interviews with various incumbents in the administrative structures much emphasis was found on day to day operations and on global issues such as the necessity of radical reform or the danger of radical reform. There was sharp criticism on both the advocates and the resisters of radical change. All seemed to agree on global goals, but little agreement seemed apparent on means of arriving at these goals. Thus the upper, the political and policy making arena was active in proposals and debates, while the lowest arena was active in day to day activity. However, middle management seemed absorbed in translating orders from above to those below. Little attention was apparent on such functions as in-service education, curriculum development, supervision, motivation of teachers, evaluation beyond the formal practices, or leadership in change and improvement. The functions of middle management seemed lost in the daily routine of staffing, examining and carrying out directives.

Educational Reform in Germany

Before examining current changes that are proposed and to a degree implemented, it is helpful to review salient characteristics of the educational system. These are the characteristics around which the change controversy revolves.

A Summary of Characteristics of German Public Education

1. Though the state is the sole authority in education, the Church has retained an influence through confessional schools (curriculum) and through taxes going to state churches.
2. Early selection of the more able students continues to be generally practised in Germany. Even though this selection may be delayed somewhat beyond the fourth school year, it is still not questioned too much.
3. The more able students are required to follow a curriculum which is narrowly defined and rigorous. The curriculum of the Gymnasium is a humanistic and scientific curriculum, that of the Realschule is practical-theoretical, while that of the Hauptschule is "einfach, volkstuemlich und genuethaft" (Brock, 35).

4. Student participation in decision making is relatively rare.
5. The *Abitur*, the examination following Gymnasium, remains a dominant factor in the student's educational plans and curriculum.
6. Bureaucratic arrangements are hardly questioned in regards to the Gymnasium and Realschule.
7. Half-day, six day a week, schools are still strongly supported by parents, teachers and politicians.
8. Different financial arrangements exist for the different school types.
9. The clear-cut three ladder system of education is accepted and generally adhered to (Brock, 1972, p. 34).
10. Administration of schools is interpreted as following traditional and legal directives, resulting in a tendency toward the authoritarian personality in administration.

Change in German Education

Pressures for change have been increasing in German education. The changes have been directed toward seven main aims:

- (1) Greater equality in education (Deutscher Bildungsrat, 1970, pp. 12, 30, 98-213; Hentig, 1970, p. 22; Rolff, 1970, p. 22; Deutscher Bildungsrat, 1973, p. 2)
- (2) Greater attention to newer teaching-learning strategies (Deutscher Bildungsrat, 1970, pp. 36-88, 40-95; Hentig, 1970; Hauke, 1970, p. 22; Deutscher Bildungsrat, 1973)
- (3) Greater sensitivity to needs in society (Deutscher Bildungsrat, 1970, p. 12; Hentig, 1970, p. 22)
- (4) Greater participation in decision making (Geiszler, 1970, pp. 53-145; Deutscher Bildungsrat, 1973, pp. 4-14)
- (5) More attention to system planning (Rolff, 1970, p. 56; Jensen, 1970; Edding, 1970).
- (6) New teacher training programs (Deutscher Bildungsrat, 1970, pp. 215-252)
- (7) Special education for administrators (Deutscher Bildungsrat, 1973).

The response to each of these reform objectives has begun to be formulated in specific change. Some illustrations follow:

Equality in Educational Opportunity

The demand for greater equality in education led to a re-examination of school organization. The result was the proposal of a *Gesamtschule* (Comprehensive school). Figure 5 presents the model of the school which has been adopted in a number of districts. Hessen claims about 75 *Gesamtschulen*, some of which are fairly well integrated; others have simply brought the three streams of students under one roof. The proposals stress a core curriculum of social studies, science, German, mathematics, a foreign language, sport, religion and art in the second stage of school (years 5-10). In addition the student would have to select at least one course from a specified list and be able to choose from others for additional courses. For the last 2 or 3 years of school the core would be reduced and the range for selection increased.

For many the *Gesamtschule* is a politically inspired threat to the old

FIGURE 5. GESAMTSCHULE (COMPREHENSIVE SCHOOL)

SEKUNDARSTUFE 2 (Secondary Phase 2) (2-3 years)		
Choice of basic and practical courses		
Language	Sport	An offering outside of all subject areas, theory and practice
S. S. (economics, politics)	Music	
Science	Religion	
Mathematics	Religion	
SEKUNDARSTUFE 1 (Secondary Phase 1) (5-7 years)		
<i>Pflichtunterricht (compulsory)</i>	<i>Choice</i>	<i>Additional</i>
S. S.	2 or 3 foreign languages	(One must be selected)
Science	Technical courses	
Mathematics	Business	
Foreign Language	Social	
Sport		
Religion		
Art		
PRIMARSTUFE (3-5 years)		
(Primary Phase)		
Kindergarten - Vorschule - Duration 2-3 years		

system; for others it is a partial answer to the need for greater equality of educational opportunity.

Teaching-Learning Strategies

The demand for the introduction of newer teaching-learning strategies has been approached at two levels. The teaching strategies advocated are alternatives to the German teaching recitation school period with the required homework during the afternoon. To break this tradition full-day school is being implemented in some places. This will permit greater attention to such things as school centered learning activities, group discussion, audio-visual and other aids, and team teaching. This move is also supported through the new school building designs which permit much greater flexibility in organizing the teaching-learning activities. However, the change is coming only very slowly.

Some teachers openly resist the full day school because it would change the teaching-learning practices of German education. Homework and recitation are seen by these teachers as essential in the learning process. There is some humor involved in the discussion of this topic in German circles. Of course no one would want to take the afternoon nap from the teachers. Teachers are quick to point to the long work week they have in the present system and the dangers of the extra burdens for teachers and pupils if the full day school were introduced.

Interesting too is the parent opposition to the full school day. So deeply ingrained is the tradition of the half-day school that parents can't see how it would be possible to have less homework time for their children. Administrators and politicians point to the need for more space, for

lunchroom, for more personnel, more supervision and the like if a full day school were implemented. The cost would be prohibitive. Against all these arguments are those of some educators who would like to try new forms of organizing for learning and those parents on a five day week who would like to have the week-end free and to have their children in school during their work days.

The German elementary school week consists of about 18-24 hours compared to about 30 hours in Canada and about 35 hours in the British primary school.

The second response in the area of newer teaching-learning strategies relates to curriculum change. An example of this is found in the hotly debated *Rahmenrichtlinien* of Hessen (Curriculum guidelines of Hessen). These guidelines have been developed to fill a vacuum created by the attention to organizational reform and were prompted by new aims in education and new educational practices in achieving these aims. Accordingly the guidelines were based on establishing learning objectives in considerable detail and providing latitude for the teacher in planning activities and experiences to move learners towards these objectives.

The fact that these guidelines moved away from subject matter or content goals to process goals led to much criticism and discussion. It also led to the consequence that school centered curriculum development must accompany the change. No detailed content was prescribed any more. This brought with it the need for different kinds of teacher education, of in-service education, and of a new type of administrator who could be a leader, a stimulator, and a colleague.

The general aims of the new guidelines are to equip the student to participate actively in a democratic society by developing skills in communication, decision making, and evaluating, and criticizing analysis of social institutions. So threatening is this change that it is attacked by prominent politicians as "Education for class struggle." In the hands of some educators this may become reality, but the general support is based on the argument that the pluralism in a democratic society calls for citizens trained in conflict resolution, citizens who are capable of evaluating, communicating, participating and decision making on their own. A feeling exists that educational reforms of the present administration in Hessen will be a major issue in next years' state elections.

Attention to Needs

Both the new organization and the new curriculum of the schools are to reflect the school's sensitivity to societal needs stemming from the advanced technological world and the emerging social patterns.

Hentig (1970, p. 22) claims that the Gesamtschule is a concept that one must support or oppose in principle and let it work out the technicalities, because it permits the school to adapt to such things as technological needs, the social needs, and the rapidly changing social structures.

The sensitivity to societal needs is clearly revealed in most of the documentation supporting the Gesamtschule and the new curriculum guidelines. The sensitivity to the needs of the individual student has not been as clearly formulated even though the motivating factors are equality of educational opportunity, development of the individual, and freedom to

choose an occupation. But the approach reflects more clearly the changing needs of society than that of the individual. In all probability the second phase of this German attempt to democratize its school system will be motivated more by concerns of the individual student and will call on participation, greater choice, and humanization of education.

Participation in Decision Making

Greater participation in decision making in schools has received very little attention. The Bildungsrat (1973) raises this as a serious issue.

Though direct participation has been limited there is a political participation which goes something like this. The Kultusministerium will develop a plan which when accepted moves down the hierarchy with little question. If resistance is found it is sent to the bottom of the hierarchy where students, parents, and groups in the community enter into confrontation types of discussions. In the meantime the administrators and teachers appear more as reactors than leaders in the discussion of such ideas.

The latest set of recommendations from the Deutscher Bildungsrat, though concerned primarily with the reform of organization and administration of schools, comes out strongly for independence of schools within Departmental guidelines. This would greatly increase teacher, student, and parent participation in decision making (Deutscher Bildungsrat, Part 1, 1973). Participation will be discussed in greater detail in the section dealing with administrative reform.

System Planning

More attention is gradually given to system or nationwide planning. Rolff (1970) advocates a continuous (rollende) reform through educational planning. Preissler (1968) illustrates a model of planning in the region of Kassel.

Just as in most countries of the world, education has become one of the critical issues in West German society. The crisis as documented by OECD and UNESCO has the following distinguishable characteristics:

(1) The explosion in numbers of students seeking further education is present. Shortages in space and teachers result. Children from all social classes must be admitted.

(2) The shortage of resources seems to increase continually.

(3) An increased demand for higher education results in the increase in cost per student and the spread of shortages to all levels of education.

(4) There is a resistance to modernize educational methodology which leads to a discrepancy of the school as a sub-system of a rapidly changing system.

(5) Education does not meet the needs of society nor of individuals in a satisfactory manner. It does not provide the foundations for the free development of the individual in a rapidly changing world.

Theoretically, the designs for planning have been given considerable attention. The actual planning programs of the states (Laender) are much more simply conceptualized than the ideal type of planning. The following points illustrate a planning pattern which has been proposed:

1. The current situation
2. The goals of education—individual, societal

3. The resources or materials needed

4. Efficiency.

There seems to be only a very modest attention to systematic planning, evaluation, to the integration of information from the local setting and the scientific world, and to the more scientific problem solving procedures.

The tendency exists to lapse into a political, only partly rational, approach to planning new educational structures in Germany, as in most other countries. Perhaps this leads to change in peripheral matters rather than in more central issues.

Teacher Training

New teacher training programs are advocated, but as yet changes have been few. Since teachers for the different school types receive different kinds of education, the problem of revising teacher education is complex and difficult. The difficulty is increased because of the current shortages of teachers and perhaps also because the present system contains a status hierarchy that may be threatened with change.

However, modern teaching methods are being adopted by some teachers, especially in the Gesamtschule. With further organizational change toward a full school day, teachers will probably, through in-service and university training, adapt to the new needs. Newer teaching technologies are somewhat alien in the old system.

As with so many proposals for change, the proposal for a change in teacher education faces great difficulties because no move is made to remove the major impediments for such a change. In order to facilitate the acceptance of new teacher education programs, some changes need to be considered in several traditional practices.

The present training program runs from 4 to 6 years and is culminated by a final examination. This examination, though carried out by university professors, is controlled by the Kultusministerium. The teacher then must teach and study for two years after which he faces his second examination, this time carried out and controlled by the Examination Board (Prüfungsamt) of the Kultusministerium. The tendency is to move toward traditional expectations to satisfy the examiners rather than toward innovative ideas that come from sources outside the system.

The second impediment toward change in teacher education lies in the teacher hierarchy and promotion system. After the initial two years of provisional status, the candidate, upon successful completion of his second examination, is known as a subject teacher and moves through the status-payment categories A-9 and A-10. Then he is known as a teacher who can teach in the Realschule and moves through status-payment categories A-11 and A-12. A-13 is the next category for the Studienrat which is followed by A-14, the Oberstudienrat. The latter two categories refer to teachers in the Gymnasium and to teachers who have some administrative responsibility.

These teachers categories are followed by A-13 to A-16 for teachers moving into administrative positions (Schulräte) with similar status-payment classifications. These are followed by H-1 to H-4 categories for those in higher positions. All of the above statements are approximate, but they illustrate the existing hierarchy.

Added to this is the fact that all teachers are civil servants and may develop more of a bureaucratic career inclination than would be the case if they were employed by local authorities. Role-expectations and promotion possibilities seem dictated more by conformity to the system rather than by changing the system.

The training of teachers, the status-payment classification of teachers and the splitting of teachers into status groups by the type of school in which they work, all tend to create barriers in attempts to change teacher education. Teachers are known as Grundschullehrer, Hauptschullehrer, Realschullehrer, or Gymnasiumlehrer. This reduces communication between groups and encourages the desire of the higher status teachers, often in decision making positions, to work against change.

Finally, the fact that at least two distinct teacher associations exist makes overall change problematic.

The Training of Administrators

Special training for educational administrators is still not available in most German states. However, there is a growing recognition that the school of the future will require a trained administrator in charge (Mueller et al., 1973; Deutscher Bildungsrat, 1970, 1973).

The school of the future, constantly changing and adapting to needs, will have functions that are not apparent in non-changing schools. Some functions are supervision, planning, in-service education, evaluation, group leadership, motivation and stimulation. The administrator would need special education in those areas as well as in research techniques and organizational analysis. This opens up a whole new field in graduate education for practising administrators and for teachers who plan to move into administration.

Perhaps the clearest statement of reform in administrative practices is provided in a recent report by the Deutscher Bildungsrat (1973). The proposals follow logically from the 1970 proposals for restructuring educational systems with a view of achieving greater equality of educational opportunity and an education more in line with societal needs. The new school structures would call for new administrative structures.

Two basic themes support the proposals: an increased school autonomy and the participation of teachers, students, and parents in decision making. The two themes are not supposed to be seen as single innovations but as developmental processes which need to be initiated and gradually developed. They are to be incorporated together with changed administrative structures in schools.

Autonomy of Schools. The autonomy of schools would depend on the competence of the actors involved, and would operate within guidelines set by the Kultusministerium. It is made clear that the autonomy is only a limited one because the guidelines will establish the general aims and specific objectives, the organization of students for learning, basic methodological guidelines, materials and media, the number of courses and the marks required for graduation and minimum rules for curriculum development. In each case there will be considerable latitude so that teachers will be able to adapt their materials and methodology to the needs of the students.

The teachers will be the main decision makers in this framework. They will be formally organized in *Lehrerkonferenzen* (teacher conferences) where teachers are to be in the majority. The decision on the planning and organization of instruction in a school will be presented for critical comment to students and parents who will also be formally organized, but without formal authority.

Most personnel and financial matters will continue to be handled by the central authority even though school participation in these matters should be gradually expanded, so that schools could make significant decisions on problems peculiar to their own environment.

Participation of Teachers, Students, Parents. As already indicated, increased participation in school decision making is recommended for those directly affected by the school's activities.

The three groups would be formally organized, receive a small expense account, and have scheduled opportunities to examine decisions, and make recommendations. Committees can be created to work at specific problems or plans. However, students and parents will not be permitted to decide on any issues that relate to schools.

The Administration of Schools. The *Schulrat* (administration) is in a position of influence as well as of responsibility, both to the Kultusministerium for the interna as well as to the *Schultraeger* for the externa. He is subject to a dual leadership role. In the present organizational model his source of authority comes from above and usually he is mostly concerned with carrying out the directives that come down to him. Whether this new recommendation would change this is highly questionable, since his tasks still are largely outside the school. Little change is recommended in regards to *Schulraete*.

There are, however, certain recommendations that may provide a new orientation for the school administrator. First, it is recommended that the principal be elected by the teachers. This will give the administrator a third source of authority, that from below and he might generate more leverage to obtain concessions for his school. The term of service is to be for a limited time only. In larger schools, a team of administrators is recommended.

Clearly, the adoption of such changes could have a far reaching effect on educational programs in German schools. It would also be open to serious risks because of the absence of trained administrators, because of the strength of teacher groups, and because of the lack of attention to a series of organizational functions such as control, supervision, evaluation, leadership, and long range planning. All of these developments point to a high priority for the training of educational administrators for German schools.

Resistance to Change

Perhaps because of these risks no recommendations seem to appear on changing several crucial aspects of German education. Several long standing practices and organizational structures of German educational systems seem to continue unchallenged, even during discussion of significant change and innovation. Among those that stand out as significant to the observer are the following:

Administrative Structure. The dual authority in educational matters has not been challenged. The hierarchy of authority upward from the school principal, where the authority moves directly down from the Kultusminister, remains unquestioned. Even the roles of the incumbents of various positions in the hierarchy, together with the upward movement of aspiring individuals and the placement of legally trained people in decision making places is rarely challenged.

Early Selection of Students. Though the selection for the three streams of education is somewhat veiled by several mild innovations, it is still as much in force as always. The positive change is that more and more students find places in university entrance schools (Gymnasium). There is a great reliance on testing in the German educational scene. Even before the first grade, the youngster must "make the test" that psychologists have prepared before being admitted to grade one. Should he fail, then he is placed in a peculiar institution known as a *Vorschule*, or if below six years of age, is denied school entrance altogether. After four years, the child writes further tests, the results of which taken together with the *Grundschule* recommendation, determine which of the three school streams he or she pursues. To soften the blow or to allow for a margin of error, pupils may delay this experience for one or two years. The *Gesamtschule* (comprehensive school) was supposed to combine the three streams but in many cases it has simply brought the three streams into one building or onto one campus. Where genuine attempts are made to integrate the three streams, the teachers and administrators are worried lest the *Abitur* examinations will deal a severe blow to their efforts.

The Abitur. The graduation from Gymnasium is accomplished through the successful completion of examinations in carefully prescribed academic disciplines. This *Abitur* is the key to university or professional education.

Core Curriculum. The humanities, science, or language routes of the Gymnasium stand highest in importance in German education. Mathematics and languages still are the undisputed subjects for the best students.

The Individual Student. The student generally considers it a privilege to be able to enter Gymnasium. His needs, his desire for freedom and participation are submerged in the demand for conformity and acquisition of subject matter content and related skills. Rarely does one hear an argument for humanizing the classical schools.

Centralization. Financial, curriculum, personnel, policy, planning, and evaluation decisions are generally made at the highest level. Even ideas for innovation and change seem to emanate from the ministry of education. Local control of educational matters is not understood too well by the German people, and it will take time, effort and planning to get students, parents, teachers and administrators meaningfully involved in educational decision making.

Conclusion

A recognition of the need for change is present at the highest and lowest levels of the educational hierarchy in Hessen, West Germany. However, historically, change of the educational structures has been very slow in this country. There is little evidence that the reliance on the traditional system will dissipate, nor that the change, except in peripheral

matters, will accelerate until such time as the German people will turn to some of the fundamental issues in their quest for change. This, too, seems unlikely, except through a sudden catastrophic break, until the ethos of unquestioned acceptance of authority and tradition diminishes in the German mind. Again the school cycle reinforces this ethos in numerous ways making the process somewhat of a closed system. To create real change, system breaks related to traditional organization and practices will have to be deliberately engineered in the closed system as it now operates. In business, communication, industry and transportation, Germany adapts quickly and effectively. In education, it has yet to find its way to adapt to a new world view.

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Status Consensus as it Relates to Team Teacher Satisfaction

The relationship between the variable status consensus and team teacher satisfaction was examined using 134 teacher teams distributed among seventy-one open plan schools in Ontario. Two operational definitions of status consensus were tested. A significant relationship was found to exist between competence of a formal team leader as perceived by team members, and their satisfaction with the team teaching situation; however, the degree of team agreement on the highest ranking team member (in terms of leadership qualities) was not found to be significantly related to team satisfaction. These findings represent a part of a larger study which included additional independent variables. (Dr. Arikado is Assistant Professor of Educational Administration at the Ontario Institute for Studies in Education.)

Teacher satisfaction with the team teaching situation was selected as an area of study in an attempt to isolate some of the variables which relate to the apparent dissatisfaction with this type of teaching organizational structure (Musella & Selinger, 1972). In this study the teaching team is defined as "a group of teachers who share major responsibility for the instruction of the same group of students, and who coordinate their instructional activities among themselves" (Molnar, 1972, p. 1). Instructional activities are interpreted to include joint planning, teaching and evaluation of pupils, with much of the emphasis on planning and evaluation. The independent variables include team leadership, team size, and status consensus.

There are a number of reasons for the selection of status consensus as a variable worthy of study. In reviewing the area of small group studies, Heslin and Dunphy (1964) found that three variables accounted for a major proportion of variance associated with member satisfaction with the group. Status consensus was one of these variables. Of thirty-seven studies reviewed, thirteen had findings which "support the notion that status consensus is an important dimension underlying variations in member satisfaction" (p. 100).

By comparing interaction patterns for laboratory groups with high and low member satisfaction, Bales (1953) attempted to specify the conditions under which a preponderance of positive reactions over negatives ones is most likely to develop. "Such a state appears to be brought about most readily by the group's reaching status consensus, defined as consensus about the relative status of all group members" (Heslin & Dunphy, p. 100).

In the search for an operational definition of status consensus, Shelley (1960) suggested an alternative definition of status consensus which stressed consensus about the highest ranking group member. In testing this definition using non-laboratory groups, Shelley found that this measure of status consensus correlated more highly with group member satisfaction than did Bales' measure which relied on the ranking of all members by all group members.

Several laboratory studies have provided results which indicated a negative relationship between imposed leadership and status consensus. Cohen, Bennis and Wolkon (1962) found that the existence of an appointed leader created a lack of status consensus which was resolved by the establishment of an informal leader after a change-over to a new group formation, and that member satisfaction was significantly highest for those groups which replaced their appointed leader with a leader of their own selection. Similarly, Goldman, Bales and Martin (1961) found that groups without imposed leaders expressed "significantly greater enjoyment" than did those with imposed leaders. From these results, it appears that in organizational settings, the achievement of a high level of status consensus appears to be facilitated where group members acknowledge the leader's competence in relation to the group task (Heslin & Dunphy). In a study related to this, Hamblin, Miller and Wiggins (1961) found that perceived competence of the leader controlled a significant amount of the variance of morale.

In the study described in this paper, the relationship between status consensus and team satisfaction with the team teaching situation was examined. Two operational definitions of status consensus were used. The first one which was proposed by Shelley may be restated as the degree of team agreement on the assignment of a team member to the first (highest) rank. The second definition which was proposed by Heslin and Dunphy may be restated as follows: if the team has a formal leader, consensus is the degree to which the team rates the leader highly in terms of adequacy as a choice for the position. In this study, the formal leader was interpreted as that person who was formally selected by the principal to serve as leader of the teaching team.

Method

Sample

The following criteria governed the choice of schools selected for the study:

- 1) total staff size of not less than ten and not more than thirty-three teachers (although the number of team teachers could be fewer than this),
- 2) grades taught ranged from kindergarten to grade eight (K-8),
- 3) in operation for more than one year, and

4) open plan physical facilities.

Criterion 1 was designed to eliminate very small schools where family-type relationships are likely to predominate, and very large schools where bureaucratic operations and treatment of personnel are more likely to occur. Criteria 2 and 4 were included so as to control for relative similarity in teaching environment, while criterion 3 was included to eliminate schools going through the normal first-year period of adjustment.

The following criteria governed the choice of teachers selected for the study:

- 1) teachers belonged to teaching teams which had at least three full-time members (leaders are included in this count); and
- 2) teachers had operated as a team for at least six months prior to the collection of data.

Since small group theory points to dyads as having special characteristics which differ from those found in groups larger than two (Hare, 1962, ch. 8), criterion 1 eliminates pairs of team teachers, while criterion 2 eliminates newly-formed teams, thereby eliminating the factor of newness and problems associated with the initial stages of group development, both of which could contaminate the results.

Teams with formal leaders were identified by the school principal and the following criteria were imposed on the teams identified: team members must agree that their team does indeed possess a formal leader, and all members identify the same formal leader.

A total of 529 team teachers constituted the sample. These teachers belonged to 134 teams from 71 schools distributed among five county boards.

Instrumentation

Satisfaction with the team teaching situation, defined and operationalized in terms of favourable attitudes toward the team teaching situation, was measured by means of the semantic differential. (Osgood & Suci, 1955; Osgood, Suci, & Tannenbaum, 1957). In applying the semantic differential, each teacher was asked to rate his/her team teaching situation on a series of bipolar scales each of which was selected for this study because it had a high loading on the evaluative factor and low loadings on the other factors. Each of these scales consisted of a seven-point continuum with a negative adjective at one extreme and a positive adjective at the other.

For Heslin and Dunphy's definition of status consensus which incorporates the degree of team agreement on the rating of the formal leader, each team member was given five alternatives ranging from 1 representing an "excellent choice" for the position, to 5 representing a "poor choice" for the position. With respect to Shelley's definition of status consensus, i.e., the degree of team agreement on the highest ranking team member, team members were asked to select the person in their team whom they consider ranks highest in competence, ability to provide group guidance, influence over the group, and importance as a team member.

In order to obtain measures of team agreement on the highest ranking team member, an entropy formula was used. This formula, which was tested by Shelley (1960) and compared with other indices which measure degree of agreement, was found to have the highest correlation with

satisfaction. The formula was borrowed from entropy measures of thermodynamics and was found to provide an appropriate index of the degree of randomness in a distribution of rankings. Entropy, that is, the degree of randomness in the distribution of first rankings in the group, may be defined by the following formula:

$$H(I) = - \sum_i p(i) \log_2 p(i)$$

Where $p(i)$ is in the proportion of the first choices received by a given group member. This entropy value $H(I)$ equals zero if one member of the group receives all the first choices and is maximal when every group members selects a different first choice (the set of $p(i)$'s are then all equal). Shelley adopted this formula to be applied to groups of varying size. In so doing he explains that since the value of $H(I)$ increases with the number of group members, $H(I)$ may be divided by its maximal value for the size of the group. The maximal value of $H(I)$ is $\log_2 m$, where m is the number of group members. Thus the relative entropy formula

$$H_{\text{rel}}(I) = \frac{- \sum_i p(i) \log_2 p(i)}{\log_2 m}$$

provides an index of randomness which can be used to compare groups of varying sizes (Shelley, 1960, pp. 159-160).

Results and Discussion

In using Heslin and Dunphy's operational definition of status consensus, the data from those teams having a formal leader were analyzed separately. The following hypothesis was tested using the correlation coefficient (r):

The degree to which the team rates the formal leader highly on adequacy as a choice for the position is positively related to the mean level of team satisfaction with the team teaching situation.

This hypothesis was confirmed; $r = 0.575$, $p \leq .01$ ($N = 34$). Confirmation of this hypothesis not only served as a test for Heslin and Dunphy's definition of status consensus (1964, p. 103), but it also provided support for the study conducted by Hamblin and his colleagues (1961) in which it was found that competence of the leader, as perceived by the group members, controls a significant amount of the variance of morale.

In using Shelley's definition of status consensus, all teams, both those with and without a formal leader ($N = 134$), were included and the following hypothesis was tested:

The degree of agreement in a team on first rankings is positively related to the mean level of team satisfaction with the team teaching situation.

Multiple linear regression analysis was used to test this hypothesis. Satisfaction with the team teaching situation was predicted on the basis of five categorical predictors which may be explained as follows: a team receives a 1 for one of five categories (which represent ranges of entropy values) of degree of team agreement on first rankings and zeros in the remaining categories; ranges of entropy included the values (a) $0 \leq x < 0.2$, (b) $0.2 \leq x < 0.4$, (c) $0.4 \leq x < 0.8$, and (e) $0.8 \leq x \leq 1.0$. The relationship

tested by this hypothesis was not found to be statistically significant at the .05 level.

Since this hypothesis was not statistically confirmed one might begin by questioning Shelley's conceptual model of status consensus and its applicability to the team teaching situation. Shelley's sample consisted of thirteen girls' clubs participating in the Y-teen program of the local YWCA. Looking at the size of the groups sampled (ten to thirty members to a club), the age of the group members (early teens), and the purpose of this organization¹, one may observe that these groups differed considerably from teacher teams. Also one may observe that the criteria for determining the highest ranking group member were different in each of the two studies. Shelley (1960) described the highest ranking club member as the one who was "most valuable to the club" (p. 161), whereas the study using teacher teams defined the highest ranking member as the one who ranks highest in terms of a combination of such qualities as competency, ability to provide group guidance, influence over the group, and importance as a team member. Many team teachers in this study expressed difficulty in selecting the highest ranking team member because they felt that all team members contributed more or less equally to the total team effort in a variety of ways. Some of those teachers on teams with formal leaders admitted that they ranked their leader as highest solely because of his/her formal position.

In conclusion, it appears that a re-examination of Shelley's operational definition of status consensus would be in order. There is need for clarification of the criteria used to determine the highest ranking group member. More important, as the results of the study using teacher teams indicate, Shelley's definition is not generalizable to all groups. Outcomes of any ranking procedure could well be influenced by the role and perceptions of persons doing this ranking, the criteria used to describe the highest ranking member, and the nature and purposes of the group doing this ranking.

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Status Consensus as it Relates to Team Teacher Satisfaction

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Student Perceptions of Teacher Pupil Control Behavior and Student Attitudes Toward High School

While there have been a large number of studies on teacher pupil control orientations and several on teacher pupil control ideology and student attitudes, the present investigation is the first dealing with teacher pupil control behavior and student attitudes.

A sample of 852 secondary school pupils responded to the Pupil Control Behavior Form and Coster's High School Students' Opinion Questionnaire. A significant relationship between student perceptions of custodial teacher pupil control behavior and negative attitudes toward school was found. This pertained to overall student attitudes and to each of six factors resulting from a factor analysis of Coster's instrument. (Dr. Pritchett is assistant director, Division of Music Education, Philadelphia Public Schools; Dr. Willower is Professor of Education, The Pennsylvania State University.)

Background

This article reports a study of teacher pupil control behavior and student attitudes toward school. It is one of a series of inquiries on the school as a social system and the place of pupil control in that system.

This line of work is based on a conceptual framework that depicts the public school as an organization characterized by a marked degree of political vulnerability and charged with the educational processing of a diverse but captive student clientele likely to hold views and values of its own. Hence, internal management and control receive high organizational priority, and various structures such as routines and rules serve as adaptive mechanisms that limit variety and reduce uncertainty for the organization and its personnel. In this kind of setting, teachers and students face

one another at cross-purposes, the former concerned with discipline and instruction, the latter with adjusting to and coping with the essentially adult system (Willower, 1971a, 1971b).

Pupil control is thus seen as a salient feature of school life. The topic has been addressed in more than 70 studies dealing with educator pupil control ideology (PCI) and behavior (PCB) (Willower, Eidell, & Hoy, 1973). Two instruments have been utilized as operational definitions for educator PCI and PCB, both based on a custodial-humanistic pupil control continuum. A custodial approach to pupil control stresses the maintenance of order and a rigid stance toward students, while a humanistic approach emphasizes a more flexible orientation based on the view that students can be self-disciplining and responsible (Willower *et al.*, 1973; Helsel & Willower, 1974).

Only a few previous investigations have examined the relationship between teacher pupil control orientation and student variables. In a study of the PCI of high school teachers and student alienation, it was found that the dimensions of alienation defined as sense of powerlessness, normlessness, and self-isolation were associated with custodialism in the PCI of school faculty (Hoy, 1973; Rafalides & Hoy, 1971). Another researcher reported that middle schools and junior high schools with custodial faculties had greater student absenteeism and suspension rates than schools having more humanistic faculties, but there were no significant differences between the school types with respect to student truancy and tardiness (McBride, 1972). In a third investigation, seven high schools that had experienced student unrest were matched with an equal number without student unrest. It was found that teachers in the schools characterized by student unrest were more custodial in PCI than their counterparts in the matched schools (Duggal, 1969).

These inquiries all dealt with teacher pupil control ideology. The research reported here is the first in this series of studies to examine teacher pupil control behavior in relation to student attitudes.

Hypothesis

The research just reviewed shows relatively negative student responses to be associated with custodialism in PCI. Further, the proposition that rigid teacher behavior will beget negative attitudes toward school on the part of students is a plausible one, and it should especially pertain in societies that espouse equalitarian values. Hence, the major hypothesis guiding this investigation was stated as follows: there will be a positive relationship between custodialism in teacher pupil control behavior and unfavorable student attitudes toward school.

Methods

Instruments

In order to test the major hypothesis, operational definitions for teacher PCB and student attitudes toward school were required. The PCB Form devised by Helsel and Willower was employed to measure the former. This instrument, which is completed by students, taps teacher PCB on the humanistic-custodial continuum already discussed. Responses to the 20-

item form are made on a five point scale ranging from "always" to "never." Examples of items, prefaced by the words "my teacher," are "says nice things to students," "is bossy with students," and "smiles when students are around." Eight of the items are stated in custodial terms and twelve are stated in a humanistic direction. A high score indicates a custodial PCB. Item-scale correlations for the PCB Form averaged .81, and a reliability analysis yielded a coefficient of .92 as estimated by Cronbach's alpha (Helsel & Willower, 1974).

The device used to measure students' attitudes toward school was Coster's High School Students' Opinion Questionnaire, part one, "How I Feel About My High School," hereafter called the HSSOQ (Coster, 1954, 1958). The 27 items that comprised this measure were scored using a five point set of response categories that indicated attitudes from very favorable to very unfavorable. Examples of items are "What, in general, is your opinion of the teachers in your high school?" "Do you feel that your high school work is the kind of work that you like to do?" and "Do you feel that going to high school will help you in enjoying life more?"

With respect to the reliability of the instrument, Coster reported that, for a sample of 878 high school students, "the coefficient of correlation between the sub-total scores made on odd- and even-numbered items was computed, using the Pearson Product Moment formula, and a value of .84 was obtained" (Coster, 1954, p. 38). The overall score on the HSSOQ is used to indicate students' attitudes toward school; the higher the score, the more unfavorable the attitude.

Coster indicated that HSSOQ items could be divided into seven groupings. These were attitudes toward teachers, the school, school program, appropriateness of school work, future expectations, social acceptance, and miscellaneous attitudes. Presumably, items were grouped on the basis of apparent similarities in meaning. Although Coster's groupings made sense in this regard, a factor analysis of the HSSOQ was performed as part of the present research.

Sample

These instruments were administered in the spring of 1973 to selected students in nine secondary schools located in a metropolitan area that included parts of two states in the northeastern United States. Four of the schools were junior high schools and five were senior high schools. Two of the junior high schools and three of the senior high school had predominately black student bodies, while the remaining four schools were predominately white. Predominate racial character was based on the criterion that at least 80 per cent of the student body be of one race.

The instruments were administered to approximately 90 students in each school. Depending on class size, students in from three to six classes in each school completed the forms during regular sessions. A total of 852 usable student responses were secured in this manner. The student, rather than the class, was the unit of analysis used in testing the major hypothesis and in examining the association of the various factors of the HSSOQ with PCB. Statistical treatments, therefore, are based on an *N* of 852.

Findings

The major hypothesis proposed a positive relationship between custodialism in teacher PCB and unfavorable student attitudes toward school. In order to test this hypothesis, a Pearson Product Moment Correlation technique was employed. The correlation between student statements of teacher PCB and student attitudes toward school was .31. This correlation was moderate, accounting for slightly less than 10 per cent of the variance, but it was significant beyond the .001 level. Hence, the major hypothesis cannot be rejected.

The factor analysis of the HSSOQ revealed significant patterns of loadings for six factors. (Factor loadings of .40 or above were considered significant) (Pritchett, 1974). Although five of the factors were named in accordance with Coster's original schema, there were a number of discrepancies in the items which constituted the original categories and their corresponding factors. The six factors of the HSSOQ are shown in Table 1 along with the correlation coefficients of each of these relatively independent subscales with the PCB scores. All correlations were significant at the .001 level. However, some of the correlations are quite low and account for a limited amount of variance. That the highest correlation obtained was for the factor concerned with attitudes toward teachers is not surprising.

TABLE 1
HSSOQ FACTORS AND CORRELATION WITH PCB SCORES

Factor	r
Attitudes toward:	
1. Appropriateness of school work	.23
2. School program	.12
3. Social acceptance	.14
4. School	.18
5. Social Context	.13
6. Teachers	.35

When PCB scores are examined by school (see Table 2), mean scores for the junior and senior high schools in the sample are quite similar. However, the mean PCB score for one of the junior high schools, school six, is comparatively humanistic, nearly seven points lower than that of the next most humanistic junior high school. If the score for school six is excluded, the mean for the remaining junior high schools, 52.1, contrasts more sharply with the mean for the senior high schools.

The mean PCB score for the predominately black schools is somewhat lower or more humanistic than the mean for the white schools. This finding is similar to that of another study in which comparable data were gathered (Brown, Willower, & Lynch, 1974).

TABLE 2
PUPIL CONTROL BEHAVIOR BY SCHOOL

School	Level	Racial Character	PCB Mean Score
1	JHS	W	52.4
2	SHS	W	49.1
3	SHS	W	47.0
4	JHS	W	54.0
5	SHS	B	51.5
6	JHS	B	43.3
7	SHS	B	47.5
8	SHS	B	47.7
9	JHS	B	50.1
Means: JHS = 49.9 B = 48.0 All students = 49.1			
SHS = 48.7 W = 50.6			

Although reliability estimates for the PCB Form were reported to be good, an additional reliability check was conducted using the present sample of 852 respondents. An alpha index of reliability of .91 was obtained, quite close to the .92 reliability reported in the original PCB work.

Discussion

We begin our discussion with a disclaimer. The correlation coefficients between the variables examined were low to moderate, even though they were significant. Moreover, no effort was made to control for the influence of other variables. Hence, our findings should be interpreted with caution.

Our main empirical results indicate an association between student perceptions of custodial teacher behavior and negative attitudes toward school and especially toward teachers. The relationship between perceived teacher pupil control behavior and student attitudes is quite direct and consistent. It holds for the overall attitude measured by the HSSOQ and for each of its factors, although it is less strong for certain dimensions.

It is not clear whether a direct cause-effect relationship pertains. However, it can be speculated that a snowball effect occurs. An earlier paper in which the term external rather than custodial control was used suggested that "... the use of external controls creates a snowball effect, in that school is made less attractive for pupils, increasing their alienation; and, in consequence, a still greater stress is placed by teachers on external controls, and so on" (Willower, 1965, p. 43).

If this happens, a kind of vicious circle in the affective domain may develop that could be difficult to break. Whether custodial teacher behavior would result in lowered student achievement in cognitive areas is problematic but plausible. In any case, this is a question open to inquiry.

The extent to which students' reports of teacher PCB coincide with "reality" is, of course, not known. The student was taken as the unit of analysis in the present study, so perceptions were given full sway. Since the dependent variable we wished to examine was student attitudes toward school, it made theoretical sense to focus on student perceptions of teacher PCB as the independent variable. The classic dictum that perceptions con-

stitute reality for the perceiver pertains. However, it should be stressed that research on teacher PCB ordinarily employs the classroom as the unit of analysis. When students tend to agree in their descriptions of teacher PCB, confidence is added that their collective perceptions reflect something more real than the perceptions of given individuals. The perception-reality gap cannot be bridged with finality, but unless there are compelling theoretical reasons to the contrary, investigations of teacher PCB should be based upon collective descriptions of behavior. Since the current inquiry was not based on group descriptions of PCB, it is essentially a study of perceptions and no claim concerning the reality of teacher PCB is made.

A final point deals with the issue of student preferences for teacher PCB. While we found that negative student attitudes are associated with perceptions of custodial teacher PCB, the matter of student preferences was not directly addressed. This question, which also can lead to analyses of the relationships of student characteristics and preferences, is being examined in an exploratory study currently underway. This and other work should help to shed more light on the nature and consequences of pupil control behavior in schools.

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Patterns of Learning Projects Among Professional Men

The purpose of this study was to investigate the extent and some of the characteristics of adult learning. Subjects were a random sample of 54 professional men.

Data were collected by an intensive interview. Findings support the view that adults engage extensively in learning. Vocational subject matter formed the largest category. Self-planned learning dominated the field of participation. (Dr. McCatty is Assistant Professor in the School of Physical and Health Education, University of Toronto.)

Although adults have always continued to learn throughout life, there are many factors which suggest the possibility of an increased incidence of deliberate learning among adults. One major motivation has been the necessity of re-learning job skills.

There are many other motivating factors which stimulate the adult to participate in learning. Increasing amount of leisure, current emphasis on group effort, and the demands of operating a democratic society have placed learning requirements on adults.

Research indicates that men and women are participating extensively in learning efforts. Johnstone and Rivera (1965), in a national survey, discovered that, in the United States, in one year, just over 20 per cent of adult Americans were actively participating in some educational activity. Later research studies (e.g., Blackburn, 1968) have suggested the existence of even more deliberate adult learning efforts than had been revealed in Johnstone and Rivera's study.

In spite of the extensive participation in continuous learning and the endeavours of many researchers in the area, there are still numerous lacunae in the knowledge of the extent and nature of adult participation. Before 1971, researchers employed interview techniques which elicited only that learning which the interviewee could recall fairly quickly and easily. Thus, many gaps remained in the knowledge and comprehension of adult learning participation.

Tough (1971) introduced an intensive, probing type of interview which appeared to be remarkably successful in uncovering a large number of learning efforts. The present study employed the same type of interview.

Problem

This study focussed on questions about learning of professional men.

To what extent do adults participate in learning?

What subject matter do adults learn?

What proportion of adult learning is motivated by the desire for credit and what proportion is motivated by considerations other than credit?

How much adult participation in learning occurs: (1) in a group, (2) with an individual on a one-to-one basis, (3) with a non-human resource (such as a programmed instruction book or a set of tape recordings), (4) when the learner is directing his own learning, and (5) in a mixture of two or more of the previous sources with no one source predominant? What proportion of group learning participation by adults is planned by a group directed by an instructor and what proportion by a peer group? What are some characteristics of the peer groups? In the learner-directed projects, what is the adult's primary method of learning? (Does he read or discuss or observe or what in order to learn?) In mixed projects, what percentage of the learning is assigned to each category of learner-teacher relationship and what is the chronological order of participation among categories?

One type of reason for distinguishing between different types of learner-teacher relationship was the next area in which further research was indicated. Why do adults choose the type of learner-teacher relationship they do for planning their learning? What relationship is there between subject matter and choice of planner?

Review of the Literature

Many researchers have considered the extent of learning participation by adults (Armstrong, 1971; Blackburn, 1968; Brown, 1964; Ingham, 1964; Johnstone & Rivera, 1965; Litchfield, 1965; Tough, 1971). Depending on the procedures and definitions used, there were varied findings by these researchers as to the percentage of adults who had recently conducted a learning project. The highest incidence was that reported by Tough; when he interviewed a group of 66 adults from seven different occupations, he found that 98 per cent had participated in a deliberate, sustained effort to learn in the previous 12 months.

The content of adult learning was considered by Blackburn (1967) and Johnstone and Rivera (1965). These researchers found that adults study a wide variety of subject matter.

The proportion of credit and non-credit learning has received attention from some researchers (Johnstone & Rivera, 1965; Tough, 1967). Johnstone and Rivera concluded that credit was not an important motivation for learning by adults.

Johnstone and Rivera (1965) were the first researchers to explore the extent of independent study being conducted by adults; they found that nearly 8 per cent of adults had engaged in an independent study in the previous 12 months. None of the earlier studies found as much self-planned learning as did the Tough survey (1971); two-thirds of the learning projects con-

ducted by Tough's interviewees had been planned by the learner himself.

Some studies have served to give some indication of resources employed by self-directed learners. Tough (1967) concluded that his 40 subjects obtained a large amount of human assistance in their self-teaching projects. Johnstone and Rivera (1965) identified recordings and tapes as aids which their subjects said they would employ if they taught themselves. Shorey (1969) listed the publications which Windsor teachers used in their continuing education efforts.

Many researchers have explored various factors which influence an adult's method preference (Blackburn, 1967; Butterdahl & Verner, 1965; Jenkins, 1960; Johnstone & Rivera, 1965; Koenig & McKeachie, 1959). Some of the factors investigated were age, occupation, income, education, and social and personality characteristics. No research could be found where the learner himself was asked to express his reasons for choosing a type of planner for his learning.

Johnstone and Rivera (1965) investigated the relationship between subject matter and methods of study and concluded that such a relationship existed. Blackburn (1967) explored method orientation and reached the conclusion that part of the variation in adult method orientation was due to the nature of the subject matter.

No other study could be found which scrutinized the learning conducted by a whole spectrum of professional men. The only studies referred to in this section which employed a probing interview were those by Armstrong (1971) and Tough (1971).

Method

Population

The population in this study consisted of males between the ages of 30 and 50, with at least one year of post-secondary education, with a minimum annual income of \$12,000.00, and in occupations rated high on the socioeconomic scale. The scale employed for identifying the occupations was Blishen's scale (1968).

The Setting

The population was limited to those who were resident in the Borough of North York. The Borough of North York is one of the six member municipalities of Metropolitan Toronto. It has an area of 69.5 square miles and a population of approximately 500,000.

One major advantage of this area for this study was that there are numerous choices of methods for educational participation. North York possesses Canada's third largest educational system; there are 109 elementary schools, 25 junior high schools, 17 secondary schools, and 2 vocational schools. The Borough Board of Education has a Department of Adult Education. This educational system offers a wide variety of adult educational programmes—academic, arts and crafts, languages, technical and commercial. York University's two campuses are situated in North York; through its Centre for Continuing Education, the University provides courses for adults in many areas. The North York YMCA specializes in adult education; numerous courses are made available for adults through

the YMCA. Seventeen community centres operate in the Borough, offering a choice of several educational opportunities for adults.

Sample

The sample was selected from the assessment rolls of the Borough of North York, prepared in 1970. These rolls consist of a series of large books, in which sections are assigned to each of the 12 wards. The pages assigned to each ward are numbered consecutively, starting with page 1.

The researcher selected the ward number and page number by employment of a table of random numbers. He then started at the top of the selected page and proceeded in order down the list, scrutinizing 45 address slots and noting the occupations of the individuals. Where a male's occupation coincided with one of those being considered in this study, a record was made of his name and address. To obtain the required number of interviewees, the researcher had to make 105 such draws.

A subsequent letter and telephone call sought the subject's cooperation and checked the criteria of occupation, age, and income. The acceptance rate of those who were requested to participate in the study was 90 per cent. The 54 interviewees consisted of 14 engineers, 9 lawyers, 9 teachers, 8 doctors, 4 dentists, 3 architects, 2 professors, 1 chemist, 1 geologist, 1 judge, 1 pharmacist, and 1 physicist.

The Learning Project

Learning participation was considered here in terms of learning projects. The learning project was the central phenomenon of this study. Essential to the concept of the learning project, as employed here, is a minimum time of seven hours during which the primary purpose is to learn. The seven hours must be compressed into a six-month period (thus eliminating a desultory type of effort). The seven-hour (or longer) project is normally composed of a series of learning episodes (although, theoretically, it could consist of one long episode). Also included may be some episodes devoted to planning, preparing, or travelling, connected with the learning, but, after the time spent on these episodes has been excluded, the total participation must be not less than five hours.

The learning project is concerned only with sustained and highly deliberate efforts. The main purpose of these efforts is to learn, i.e., to effect a change in the individual himself. The learner must be clear as to what he wants to learn. These are the three criteria which are the very core of the definition.

There is no restriction on the type of change sought by the learner. It may be acquisition of new knowledge or skill, change of personality, or improvement in physical functioning. The changes which occur in the learner may be easily observable, as they would be in learning to ski. Or the changes may be the subtle alterations in maximum oxygen uptake, haemoglobin count, and pulse rate which accompany an improvement in physical fitness.

The definition of a learning project specifies that the learner must want to retain the knowledge and skill which he gains. The length of time for retention was set arbitrarily at two days.

Data Collection

The data used in this study were collected by means of an intensive interview. The model for the interview schedule was Tough's schedule (1971), which was employed in 1970 to investigate similar learning phenomena. Prior to use in this study, the interview schedule was revised several times on the basis of trial interviews conducted with each version of the schedule on the investigator's friends.

A major objective of the schedule was to familiarize the interviewee with the concept of a learning project. Another very important objective in the formulation of the interview schedule was to devise a very probing technique, which would elicit as many of the subject's learning projects as possible.¹

Most of the interviews took place in the subject's office or home. During the process of the interview, repeated oral probes were made to uncover as many learning projects as possible which the interviewee had conducted in the previous 12 months. When these probes failed to uncover any more learning projects, two handout sheets were employed to aid the subject to remember his learning projects. One of these sheets listed some of the things that adults learn, and the other listed some of the ways that adults learn.

The subject was asked to estimate the number of hours that he spent on each learning project in the 12-month period prior to the interview.

The interviewee was asked if any part of his total motivation for undertaking any of the learning projects had been the desire for credit. If more than 50 per cent of the total motivation had been the desire to obtain a degree, diploma, or certificate, or for an examination or upgrading related to a job, the learning project was categorized as a credit project.

The remainder of the interview discussed the planner of each learning project. (The planner was here defined as the person, group, or object which made the day-to-day decisions regarding what and how the subject learned.) The subject was asked first to identify the planner for each learning project.

The subject was then asked to categorize the planner in one of four categories—group, one-to-one, non-human, or self (described on a page of the schedule which was handed to the interviewee). In *group* learning, the learner is a member of a group of five or more persons (including the instructor); the group may have a specific instructor or may be a group of peers. In *one-to-one* learning, there is one learner (or sometimes two or three) and one instructor—a common type of relationship between the learner and the golf professional, the driving school instructor, or the piano teacher. In *non-human resource* or *inanimate* learning, an inanimate resource (e.g., a programmed instruction book or set of tape recordings) plans the learning project. In *learner-planned* or *self-planned* learning, the learner assumes the primary responsibility for planning and conducting the learning project. A project was categorized as *mixed* if the responsibility for planning did not reside primarily (51 per cent) in any one of the four above-defined categories.

If the planner was in the peer group category, the subject was asked to describe the group briefly. If the planner was in the learner-planned

category, he was asked to name his major resource. For projects in the mixed category, the subject was requested to assign the percentage of planning to each category and to name the order in which the two or more planner categories operated.

After all learning projects had been categorized, the subject was asked regarding one of the non-credit learning projects in each of the four pure categories why he had chosen the planner which he did. (If more than one learning project was in the category, one was selected by use of a table of random numbers.)

Findings

Participation

The participation of the 54 learners was considered, first, in terms of the number of projects, and then in terms of the number of hours.

The 54 subjects had participated in a total of 599 projects in a 12-month period. This was an average of 11.1 projects for each subject; the median was 10.3. No interviewee had failed to participate in any learning project at all. The least number of projects participated in by an interviewee was 2, and the greatest number was 31. The mode was 11, and 7 subjects had participated in that number of projects. This represented a considerable extent of participation, as far as number of projects was concerned.

TABLE 1
HOURS OF PARTICIPATION

Number of Hours	Number of Subjects	Number of Hours	Number of Subjects
0- 99	0	1700-1799	2
100- 199	1	1800-1899	1
200- 299	2	1900-1999	1
300- 399	2	2000-2099	1
400- 499	2	2100-2199	0
500- 599	3	2200-2299	1
600- 699	5	2300-2399	0
700- 799	4	2400-2499	0
800- 899	6	2500-2599	0
900- 999	1	2600-2699	1
1000-1099	3	2700-2799	1
1100-1199	3	2800-2899	0
1200-1299	2	2900-2999	1
1300-1399	4		
1400-1499	1		
1500-1599	2		
1600-1699	2	4200-4299	2

The full story of the extent of participation is not told, however, until the measurement by time is also considered. Data in Table 1 show the number of hours of participation for the 54 subjects over a 12-month period.

None of the subjects had participated for fewer than 100 hours, and only one for fewer than 200; he had spent 157 hours in learning projects. Two of the subjects participated about 4,200 hours.² The total number of hours of

participation for 54 subjects was 67,200, or an average of 1,244 hours per subject; the median was 1,058 hours.

In general, then, it was found that the interviewees had participated extensively, whether judged in terms of number of projects or in hours of participation. The findings revealed a much higher incidence of participation than had been discovered by earlier researchers (Blackburn, 1967, 1968; Johnstone & Rivera, 1965).

Subject Matter

This study employed Johnstone and Rivera's subject matter categories (1965) for classification of the 599 projects. The seven categories of subject matter identified in this study will now be discussed.

Vocational. By far the largest segment of subject matter was in the vocational category. More than 50 per cent of all learning projects for the sample in this study were work-oriented.

A fairly common type of vocational learning project was keeping current in the interviewee's vocational area. This was a continuous type of effort; the project had no end.

Other vocational learning projects had a limited time span and were undertaken in response to a specific problem. One example of this type was the project conducted by a lawyer who represented a client in a motor accident and had to learn the details of the accident and the previous application of the law in similar cases. A dentist's motivation for a learning project was a new discovery in his profession—an implanting technique.

Hobbies and recreation. The hobbies and recreation category contained 89 projects and was the second most extensive category. The projects in this group, by definition, were carried on in leisure time, and had no work connotations.

The greatest number of projects in a sub-category (27) were associated with outdoor recreation, and included skiing, sailing, golf, skating, flying, nature, snowmobiling, riding, driving, camping, conservation, fishing, and navigation. A doctor and an architect had chosen both skiing and sailing as learning projects, and another doctor had learned to sail and to ride.

Sports (spectator), music, art, technical arts and hobbies, travel and other countries, and agriculture were some of the other classes of subject matter proposed as learning projects in the hobbies and recreation category. In technical arts and hobbies, photography, with 4 projects, was the most frequently reported learning effort. Travel and other countries (7 projects) was a fairly sizable sub-category. The subjects were not arm chair travellers; in 6 of the 7, there was actual travel related to the project, and in the seventh, travel was contemplated.

Current events. The current events category contained 56 projects, and 39 learners had participated in these projects. The subjects included here were those dealing with current social, political, and economic affairs and civic responsibilities.

Most of the projects were aimed at having a general grasp of current topics, but in many projects, a specific area of interest was identified. Among these areas were the Israeli Six Day War, Ontario politics, and minority struggles. Five interviewees learned about pollution, and one

Patterns of Learning Projects among Professional Men

wrote a brief on the subject for the environmental department of the government.

Home and family life. In the home and family life category, there were 56 projects. These projects included topics pertaining to the establishment, maintenance, and improvement of a home, or to the carrying out of household duties and family responsibilities.

In the area of home improvement skills, there were 19 projects. There were 17 home economics projects, 9 projects in gardening and landscaping, 3 in family relationships, and 1 in future family prospects. One interviewee had learned how to cook.

Personal development. There were 28 projects in the field of personal development. This category was defined as being comprised of subjects aimed at helping people expand themselves in the areas of physical fitness, health, personality development, and interpersonal and social skills. Nearly all (26) of the projects were in the area of physical fitness. Of the remaining 2 projects, one was sensory awareness, and the other was conscious relaxation. No respondents had undertaken a learning project aimed at improving their personality or social skills.

Academic and general education. In the academic and general education category, 25 projects were reported. These were academic subjects normally studied as part of a high school or college education and excluded all job-related subjects.

The projects reported by the interviewees included history, literature, anthropology, philosophy, political science, psychology, and languages. A geologist's interest in anthropology had been aroused as a result of attendance at a seminar in this area sponsored by Trinity College for its alumni. An engineer's learning project in Dickens' works began because, being Dutch, he had never read Dickens, and his wife gave him some of Dickens' books for Christmas. A doctor learned Italian because he had some Italian patients.

Religion, morals, and ethics. The smallest group of subject matter was in the religion, morals, and ethics area; there were 15 projects. Included were projects concerned with traditional religious training, religion applied to everyday life, and all other aspects of religion, morals, or ethics. An engineer's longest project (435 hours) was in the religious area when he and his family became born-again Christians.

Ten Types of Learning Projects

Learning projects were categorized into types by a cross-tabulation of two dimensions. One dimension dichotomized learning, on the basis of motivation, as credit and non-credit. The other dimension identified four distinct types of learning on the basis of the planner of the learning—group, one-to-one, inanimate, and learner-planned. When the majority of the planning of a learning project resided with one of these four planners, the project was assigned to that category. In this planner dimension, a fifth type of situation was recognized and termed mixed learning; the planning was conducted by a mixture of planners from two or more categories, with no one planner responsible for more than 50 per cent of the planning.

The interviewee was asked to specify the planner of each project and to assign the planner to one of the four categories. Where a project was

planned by planners from more than one category, it was assigned to the planning category in which the majority of the planning lay (providing more than 50 per cent of the planning was conducted by a planner in any one category). If no planner was more than 50 per cent responsible, the project was classified as mixed.

This fragmentation of the learning participation into 10 different cells permitted a discussion of how the learner participates along the two dimensions which form the 10 types of learning projects identified in this study. Is the learner primarily motivated by the desire for credit? Does he choose as a planner a group, an individual, a non-human resource, or himself?

TABLE 2
PROJECTS AND PARTICIPATIONS IN 10 CELLS

Planner	Credit				Non-Credit				Total Projects	
	Projects		Participants		Projects		Participants			
	No.	%	No.	%	No.	%	No.	%	No.	%
Learner	1	0	1	2	457	76	54	100	458	76
Group	7	1	3	6	62	10	34	63	69	11
One-to-one	1	0	1	2	40	7	24	44	41	7
Inanimate	0	0	0	0	4	1	4	7	4	1
Mixed	0	0	0	0	27	5	17	31	27	5
All Five Categories	9	1	3	6	590	99	54	100	599	100

Table 2 provides a comparison of learning participation in the 10 cells. The extent of participation in each cell is shown (measured by the number and percentage of projects, and number and percentage of participants). The percentages shown in Table 2 indicate the incidence of participation in each cell measured in terms of projects (599 = 100 per cent) and participants (54 = 100 per cent).

The last line of Table 2 is really a comparison of the credit and non-credit participation. These figures disregard the planner distinctions and report the results for the total credit learning and total non-credit learning.

The comparison indicates that 99 per cent of all projects were non-credit, and only 3 participants reported credit projects. The total hours of credit participation for the 54 subjects was 657, and the total hours of non-credit participation was 66,543.

Of the 9 credit projects, 7 were group-planned. A single individual accounted for the 2 credit projects which were planned in the one-to-one and learner-planned cells (as well as 4 of the 7 projects in the group-planned cell).

Another surprising fact indicated by the data in Table 2 is the extent to which learner-planned learning dominated the field of participation. All in-

interviewees had participated in self-planned learning, and 76 per cent of the projects were in this category. The range of projects per participant in this cell was 1 to 28, and the mean and median were 8.5 and 7.5 respectively.

The inanimate planner was used to a very limited extent by the interviewees; only 4 participants had employed this type of learning.

Of the 34 participants in the non-credit group cell, 20 had one project, and the 3 who had participated most extensively had 4, 5, and 6 projects respectively.

In both the non-credit one-to-one cell and the non-credit mixed cell, the range of projects per participant was 1 to 4.

In 27 of the projects, the interviewee could not allocate the major planning responsibility to a planner in any of the 4 categories recognized in this study. Because no single category of planner was responsible for more than 50 per cent of the planning responsibility, these 27 projects were listed as mixed planner, in accordance with the definition of mixed planner. In most cases, the planning was equally divided by planners in two categories; in many cases, the subject and his wife planned together on an equal basis. These mixed projects were all non-credit-motivated. There was a fairly substantial volume of mixed planning. In extent, the mixed planner learning was just below the 3 main categories (group, one-to-one, and learner-planned). Of the 27 projects, 23 shifted between planners in no definite chronological order. In many cases, the shuttling back and forth was so rapid that the planning became "meshed".

Only 20 per cent of the interviewees had used only one planner category (in each of the 11 instances, the category used being the learner-planned). Most of the subjects had used two or three different categories of planner.

Of the 62 non-credit group projects, 10 (or 16 per cent) were conducted in a peer group and 52 with an instructor. In all 7 of the credit group projects, the group had an instructor. Of the 10 peer groups, 7 were committees which had been appointed, or elected, to carry out one phase of an entire operation, and the committee members had to learn certain things in order to fulfil their function.

A total of 25 interviewees reported having at least one project in the one-to-one area (24 of them with non-credit motivation). The number of projects reported was 41.

Methods for Learner-planned Learning

For each learner-planned project, the learner identified the source of the majority of his subject matter. In 391 of the 458 projects, one major method was identified by the interviewee. In 59 cases, 2 methods were combined equally, and in 8 cases, there was an equal combination of 3 methods.

The most common single method was reading. A variety of reading materials was employed, and sometimes identified specifically by the interviewee. Books, newspapers, journals, magazines, and reports were all credited as sources of information.

The second most common method for the learner-planned projects was discussion—sometimes with one person, and sometimes with several.

Doing was identified in 35 projects as the major method of learning.

This method might be employed to provide a trial and error type of learning situation, or to effect a change in the subject through practice.

Observing was a less common method of learning. Only 2.8 per cent of the total 458 projects depended on observing as the major single method of learning. There were, however, 15 other projects in which observing was combined equally with another method, and 3 in which observation was combined with 2 other methods, with each responsible for one-third of the total.

Reasons for Choice of a Planner

Articulated reasons. Other researchers have considered various personal, social, and personality factors which are judged to be influential in the adult's choice of a planning category. In this study, it was decided to identify the conscious reasons, expressed by the participants, for choosing the planning category which they did. From each planner category reported by each interviewee, one project was chosen at random, and the interviewee was asked why he had chosen the planner he had specified for that project. In some cases, more than one reason was given in answer to this question; all specified reasons were recorded.

The 54 participants who reported self-planned projects gave 61 reasons for self-planned participation.

The most frequently cited basis for choice was desire for individualized subject matter; 25 participants gave this as a motive. Thirteen of the 25 wanted to select the subject matter so that it could be applied to their particular interests. The other 12 had very specific problems; their learning consisted of acquiring the knowledge to solve these problems.

Physical availability was cited in 10 instances as a reason for choice of a learner-planned approach. It was an economy of time or effort for the learner to do his learning in the most convenient location for himself.

In 7 cases, the learners stated that a certain facet of their personality made them choose a self-planned type of learning. A feeling of independence and self-reliance (or, perhaps, in some cases, lack of self-confidence) prodded these learners towards an autonomous approach to planning.

Five of the interviewees identified their expertise in the subject matter as their reason for planning the projects themselves. The projects were in their professional area.

Financial economy accounted for four decisions by learners to plan for themselves.

Flexibility of time was a factor inducing the learner to plan his own project in four cases; a course would have imposed the requirement of specified hours of attendance.

In three cases, the learner was at the stage in the subject matter where he thought that self-planning was more appropriate than other types. Two of these learners considered that they were sufficiently advanced that they did not require outside help in the planning. The third participant said that he had not advanced sufficiently to warrant joining a group.

The effectiveness of the method, the ease of the subject, and his own

capability at planning were each given once as a reason for using the self-planned approach.

A total of 37 reasons were expressed for choice of the group-planned category. The most frequent of these (9) was that that type of format already existed in a form such as a staff or committee meeting arrangement. The interviewee therefore participated in the existing manner.

The capability of the instructor was given 8 times as the reason for a group type of learning and was by far the most frequent reason expressed for choosing the one-to-one type.

Subject matter. In this section, the relationship of subject matter to planner choice is discussed. The large majority of projects in the vocational and hobbies and recreation categories were learner-planned. No other area of subject matter had such a large percentage of learner-planned projects as current events (96 per cent). Of all the subject matter areas, none had as large a percentage of one-to-one projects as did the personal development area; 29 per cent of these projects were planned on a one-to-one basis. The largest percentage of group-planned projects for any subject matter area was found in the religion area, where 47 per cent of the projects were planned in a group setting.

Conclusions and Implications

The data support the major premise in this study regarding the extent of learning by adults, and especially of the learner-planned type. The participation by adults is extraordinarily extensive. The adults interviewed in this study spent an average of 24 hours each week participating in learning projects of different types, including 20 hours in projects which the learner had planned for himself. This did not include the casual learning which is part of every human's life. Also excluded was purposeful learning in which a series of related learning episodes were of shorter duration than 5 hours.

The data also indicate that when the adult undertakes self-planned learning (100 per cent of the interviewees did so), he does so mainly because he can tailor the material he learns to suit his individual needs.

Taken together, these findings have certain implications for the practitioners of education—both in the more obvious scholastic institutions (schools, colleges, and universities), as well as in those professions which provide continuous professional education. Since such a major part of the adult's learning is planned by himself, it is apparent that a primary aim in education should be to equip the adult with skill in planning learning. The present emphasis on what the student should learn might be profitably supplanted with an emphasis on how the student should learn.

The findings regarding the extent of learning also have implications for researchers in this field. The type of interview employed in this study, which used some probing questions and two hand-out sheets, appears to be very effective in aiding in the recall of learning efforts.

When the learners planned their own learning, they relied heavily on reading and observation for provision of the subject matter. Any improvement in the learner's acuity in these areas would aid in his ability to learn

and might also form part of a general body of information on learning skills and techniques.

The capability of the instructor was a very important factor in the learner's choice of methods. In fact, the instructor's proficiency may be decisive in the initial decision to learn. The implication of this fact for programme planning is important; the provision of expertise may trigger off the desire to learn.

There are implications in this research for practitioners of physical education. Keeping physically fit was a learning project for 26 of the 54 interviewees. The majority of their physical fitness projects were learner-planned, and no projects were performed in a group setting. The practitioners of physical education should augment their present group-oriented programmes with campaigns aimed at providing the most recent knowledge in physical fitness to the individuals who will be planning their own programmes.

The subjects in this study engaged in a large body of learning as a leisure pursuit. Yet, learning has been largely overlooked by researchers as a leisure activity. It should be recognized that learning projects can constitute a satisfying leisure pursuit.

One finding in this study was that, in very few learning projects, was credit a major motivation. This knowledge is of importance to many planners of adult learning (e.g., extension departments of universities). Course offerings, for some segments of the public, need not provide the incentive of credit, in the form of a degree, diploma, or certificate, in order to be attractive to most learners.

One purpose in the selection of the population used in this study was the expectation that their learning might act as a model for others. The sheer immensity of their learning effort alone should stimulate others to more extensive participation. A psychological barrier often seems to inhibit human accomplishment until there is an awareness of others' successful endeavours (a well-known phenomenon in athletics).

This study has shown that adults can plan a great deal of learning for themselves. An awareness of the potential which we all possess to teach ourselves may inchoate many learning projects which might have remained latent because of difficulties which the learner experiences in seeking or obtaining a teacher.

This article is based on a Ph.D. thesis, Ontario Institute for Studies in Education, University of Toronto, 1973. The thesis is obtainable on microfilm from the National Library of Canada, Ottawa K1A 0N4.

¹ To indicate the technique used, the following sections have been extracted from the interview schedule and are reproduced here.

Is there anything you have spent several hours in learning over the past 12 months?

Now think back over the past 12 months. Have you made any deliberate effort to learn to do anything, or to obtain information, or increase your knowledge? Have you tried to increase your understanding or change your emotional reactions?

I am interested in any effort you made to learn anything at all. It doesn't have to be important; it doesn't have to be hard or serious; it can be easy, or trivial, or fun. We can include any information, knowledge, or skill, or understanding that you have tried to gain, just as long as you spent a few hours at it. Can you recall anything else?

We're trying to get as complete a list as possible, so think back now right to (month) of last year. It doesn't matter what the knowledge or skill or information was, just as long as you spent several hours at it. What else can you recall?

² The top participant in terms of hours (4,233 hours) was a dentist. His participation was so extraordinarily extensive that he was queried subsequent to the interview. He stated that he considered his estimate a good one.

Patterns of Learning Projects among Professional Men

He attributed the extent of his participation to two factors. Firstly, his current events project included 500 hours he spent listening to news broadcasts on the radio while at work. Secondly, he slept only four to five hours nightly, leaving himself more leisure time than most people; most of his leisure was devoted to learning. Like Houle's learning-oriented individual (1963), learning with him was a constant activity.

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Reading or Listening: A Comparison of Techniques of Instruction in Elementary Social Studies

The relative value of reading and listening as techniques of instruction to facilitate comprehension of social studies material was explored. Sixth grade students, grouped by intelligence level, reading ability, and sex read or listened to identical material drawn from commercial supplementary unit-texts and were tested on their comprehension of this material. Resulting data indicated that the comprehension of children of high intelligence, high and below average reading ability, and girls was significantly better when reading than when listening on at least one of the two units, though neither technique facilitated a significant difference in the comprehension of all sixth grade children. (Dr. Breiter is Assistant Professor of Elementary Education, Iowa State University.)

The teacher who seeks information concerning the relative merits of learning by reading and of learning by listening may have difficulty identifying guidelines which clearly indicate the advantages of one method over the other.

Both reading and listening are considered key activities in learning factual material. Listening is the original source of information for children, but has the disadvantage that "seldom can it be mulled over or even accurately recalled by the listener" (McKee, 1966, p. 34). Reading skills, however, later become important learning tools in every area of study, as noted by McKee (1966) when he stated, "From the third grade on, reading can and should provide advantages that listening cannot supply" (p. 13). In general, research has suggested that people do learn more by *listening* during the early school years, but increasingly learn more by *reading* during the later elementary school years. Many reasons might be suggested for this conclusion, chief among them possibly being that while children are normally exposed to in-depth, sequential instruction in reading skills, much less instruction is given in listening skills. Until fairly recently, not enough has really been known about listening, the various listening skills,

and how to teach them to give effective instruction in this area. Largely, it has been assumed by instructors that children just knew how to listen.

This study does not attempt to specifically advocate either of these skills—reading or listening—as the ultimate in instruction. It is common knowledge that some children learn better by one mode than by another, and many prefer or even require exposure to information by more than one approach. It does, however, attempt to look at the present status of reading and listening as techniques of instruction within the context of one grade level in one subject area, and to assess which seems to be most likely to be effective with which students. In this context, it is hoped this study will assist the classroom teacher in gaining some insight into choosing appropriate teaching techniques for individuals and groups in the classroom.

Related Research

Research in the fields of reading and listening has been voluminous and varied. A brief description of several studies which have a pertinent bearing on the purpose of this paper follows.

Listening. Maurice S. Lewis (1953) attempted to measure the ability of intermediate grade pupils to comprehend some of the materials commonly presented orally in the classroom with two equivalent forms of a test which measured with some degree of accuracy the following five listening skills: (1) ability to get main ideas, (2) ability to recall facts and details, (3) ability to make inferences from facts presented in a selection, (4) ability to recognize word meanings from context, and (5) ability to follow directions (p. 1). Lewis assumed that listening ability, like other human abilities, is distributed among the general population in accordance with the principle of normal probability, that individuals differ in their ability to comprehend the spoken word, and that listening comprehension can be measured in quantitative terms (p. 2). His results seemed to imply that the level of reading difficulty has little or no bearing upon the level of listening ability, and that there is a great difference in the listening comprehension of individuals (p. 33).

Ann Jackson's (1966) study proposed to determine if a difference exists in the listening comprehension of boys and girls, and to determine the correlation between listening and various reading abilities. She concluded there was a significant correlation between listening and reading vocabulary and also between listening and reading comprehension. She found no significant difference in the ability of boys and girls in listening comprehension (p. 85).

A study in listening comprehension by Charles A. Lindsey (1953) reported that pupils' listening comprehension appeared to be more dependent upon the interest appeal of the material being presented than upon such factors as classroom interruptions, etc. (p. 98). Though not a surprising finding, since most people have found themselves "shutting out the world" when highly involved and interested in something to which they are listening (or reading), it is a most interesting finding in regard to this project.

Composite Points of Interest—Listening. Overall, a survey of available literature in the field of listening yields the following points of interest which have been documented by one or more research studies.

1. Children are beginning to gain more by reading than by listening as they enter the upper elementary grades.
2. Some of the claims made for the superiority of listening comprehension may have been overrated if the material used in the studies was of extremely high interest to the pupils.
3. Listening may be a superior technique of instruction for some individuals, but is probably not so for all.
4. There are specific factors which affect the ability of children to comprehend through listening, such as the speed at which the material is presented, and the individual's adjustment.
5. Listening tests have been constructed which measure skills which researchers feel are indicative of the degree of listening ability possessed by an individual.
6. Ability to listen varies with the individual just as other skills.

Reading. Studies which explore various facets of reading comprehension in social studies are also numerous. Much of this work, such as a study by Lattin (1952), indicates that a great deal of children's factual knowledge of social studies material is less than adequate; less, in fact, than what authorities in the field considered to be common knowledge of the topic (Canada) over which the children were tested (p. 21). A partial explanation for findings such as this may be found in George Millis' (1959) study of pupils' understanding of social studies terms. In his work with fifth grade students, Millis found that 61.3 percent of their responses to designated terms drawn from their texts were vague and indefinite, or completely incorrect and/or not understood (p. 198). Similar-type results were found in a study by Walter E. Kerr (1934, p. 129).

In an investigation of text materials, R. H. Franzen (1922) found that much of the material was much too difficult for the sixth graders who were expected to use them (pp. 83-85). Inasmuch as Fred A. Sloan's (1959) study supported this finding, by noting that the general trend of publishers was to go above the indicated grade level (p. 206), there appear to be certain difficulties inherent in reading in the social studies which must be taken into account when choosing reading as a technique of instruction.

Composite Points of Interest—Reading. Overall, when considering the available literature in the field of reading in the social studies, the following generalizations, documented by one or more research studies, may be made.

1. Reading, especially when limited to textbooks, is not a completely adequate technique of instruction.
2. The use of textbooks as the sole source of reference in social studies is inadequate.
3. The criticism that textbooks are often too vague and underdeveloped in their treatment of concepts and generalizations appears to be at least partly valid.
4. In reading materials of various kinds and of various levels of difficulty, it is necessary to adjust the rate at which the material is read. Specific instruction in this skill may help to improve a child's reading comprehension.
5. If reading comprehension is to occur, use of reading materials of an appropriate level is necessary.

6. The chance of success in learning social studies generalizations is enhanced by the use of a variety of methods and materials, among them reading and listening, but also including other aids and approaches.

A study of double interest is Richard Hampleman's comparison of the listening and reading comprehension ability of fourth and sixth grade pupils. Some of Hampleman's findings will be supported by this study, some will be opposed, and some will suggest related factors. Because of its application to the study being reported, Hampleman's conclusions will be reported in the discussion of results later in this paper.

Procedure

This study proposed to determine the relative value of two specific techniques of instruction in the social studies, reading and listening, when the factors of varying levels of intelligence and reading ability, and sex were considered. The general purpose of the study was to determine if there was a significant difference in the comprehension of those students who read the chosen material and those who listened to it. The following eight categories of students were considered within the context of the general question, "What is the effect of reading and the effect of listening on the comprehension of supplementary social studies materials by sixth graders?"

1. students of high intelligence
2. students of average intelligence
3. students of below average intelligence
4. students of high reading ability
5. students of average reading ability
6. students of below average reading ability
7. male students
8. female students.

The procedural steps of this investigation were as follows. Two supplementary social studies unit texts, each dealing with a single topic, were chosen as the experimental material. These unit texts were commercial material written for Grosset and Dunlap, Inc. as part of their Who-When-Where series of supplementary social studies materials for upper elementary grades. These texts were titled *Aztecs Of Mexico* and *This Is Canada*.

After the materials were chosen, all major concepts, facts, and generalizations in the unit texts were listed in the order in which they appeared. For each concept, fact, or generalization, a question or questions which reflected the basic idea was constructed in multiple-choice format.

Both the unit texts and the tentative questions constructed from them were submitted to a panel of authorities. Since the material concentrated on the social sciences of history and geography, the panel of authorities who judged the materials and the questions drawn from them consisted of professors of history, geography, education, and psychology at Mankato State College, Mankato, Minnesota. This panel made suggestions for improvement of the quality of the questions in content and form, and judged the quality of the unit texts as suitable for the purpose of the study.

Each unit text was divided into four lessons—consisting of roughly the amount that could be read or listened to in 20 to 25 minutes. The ap-

appropriate questions from the total number approved by the panel were organized into question sets—one for each lesson, and an answer sheet was devised which could be used for all question sets and for the pre- and post-tests also devised at this time. A pre-test and a post-test were constructed for each of the two unitexts. They were identical, except that the order of the questions in the post-test was a reversal of the order of the questions in the pre-test.

At this time a manual to be used by the teacher in administering the experimental materials was written. It included all needed information about the materials, the question sets and tests, and directions to the teacher for each lesson for each of the two unitexts. Directions for handling and returning the materials and the children's completed answer sheets were also included.

Considerable care was taken to ensure content validity for these experimental, investigator-written materials used with the unitexts. In detail, from the list of item ideas reflecting the facts, concepts, and generalizations found in the unitexts by chapters, one or more multiple-choice questions, each having four possible answers, were developed for each basic fact, concept, or generalization. These questions were grouped into sets which covered the lessons in detail. Four question sets were constructed in this way for each of the two unitexts. These question sets each included the concepts in one or two chapters of material, depending on the length of the chapters, the number of items involved, and the estimated time of reading or listening to the text material.

The pre-test and post-test questions were designed to test knowledge of facts, concepts, and generalizations more general in nature and of greater importance than many of the items in the question sets. The reversal of question order comprised an effort to minimize the possibility of memorization of test questions by the students.

The manuals consisted of directions as to procedure; purpose of materials; seating, timing, and other testing considerations; specific directions for the administration of each test; and directions for handling the materials. This material was meant to serve the following purposes: The pre-test for each unitext helped the investigator to determine the prior knowledge of the unitext topic each child possessed. The post-test helped to determine the knowledge of each child at the end of each unit. The question sets were basically a motivational device to encourage the children to listen or read carefully. The manual of directions was to assist teachers in maintaining a uniform presentation and administration of the materials in regard to time limits, approaches used, and amount of teacher explanation and assistance which could be given.

The submission of the tests, question sets, and manuals to experts in history, geography, professional education, and test construction for suggestions, criticism, and approval provided the basis for the content validity claimed for this material.

The experimental materials and unitexts were first used in two pilot studies with 111 sixth-grade students who comprised three classes. The first pilot study was made with two classes (87 pupils) and the second with one class (24 pupils). After each of these pilot studies, the materials were revised as indicated by item difficulty and discrimination analyses of the

items, and suggestions by the classroom teachers who used the manuals and materials.

The revised experimental materials were then organized into their final form and packaged into class-sized sets along with the appropriate unitext or set of tapes to be used. A description of the use of these experimental materials follows.

The directors of elementary education in several cities in southern Minnesota were contacted for the purpose of explaining the study and requesting permission to conduct it in their systems. An effort was made to identify systems which were considered, statewide, to have good educational programs and teaching staffs, and whose enrollment included a cross-section of pupils who would be both typical of the geographical areas and of varying reading ability and intelligence levels. Two systems were chosen to participate in the study. One was a college community (Community A) which had some degree of industry; the second (Community B) was more heavily industrialized. Both communities fell into the 25,000 to 50,000 population range.

With the permission of the respective director of elementary education of each system, all sixth grade teachers in these systems were invited to participate in the study. Fourteen teachers in seven schools in Community A, and nine teachers in five schools in Community B accepted this invitation. They then attended orientation sessions which prepared them for their role in the project, and familiarized them with the experimental materials. These teachers were responsible for twenty-eight classes of which fourteen were from each community.

The twenty-eight participating classes were then randomly assigned to the experimental (listening) group or the control (reading) group. In order that complete data would be available at the end of the study for each child in the sample population, the following limitations were made concerning the use of student scores in the analysis of data. A student was eliminated from the sample population if:

1. he was absent during any part of the period during which his class was participating in the project,
2. he had an excessive hearing loss, thus preventing him from using materials which were listening-based,
3. his tested intelligence was below that of children usually assigned to the "normal" classroom, or
4. his records did not contain a fifth-grade test score on either the *California Short Form Test of Mental Maturity* or the *Lorge-Thorndike Intelligence Test* and a sixth-grade silent reading test score on the *Iowa Test of Basic Skills* administered in the fall of that school year.

A schedule was set up which allowed each of the twenty-eight classes of sixth graders, under the direction of their usual classroom teacher, to use the experimental materials one hour per day for ten school days. Five periods were used to read or listen to the text of "Unit I" and complete the questions sets which matched each lesson. Five were similarly used for "Unit II". Each "unit" was preceded by a pre-test and concluded with a post-test. At the end of the experimental period, which was from November through January, complete data was available for 570 students. Of the 741

students originally participating, 171 were eliminated on one or more of the limitations given above; 286 comprised the experimental (listening) group, and 284 comprised the control (reading) group.

As previously indicated, a standard measure of intelligence and one of silent reading ability was recorded for each student participating as a member of the sample population. Though the sample population was basically divided into two major groups—reading and listening—three intelligence level subgroups which cut across these lines were established through the use of these test scores. The limits, in terms of intelligence quotients, of these subgroups were as follows:

Groups	Intelligence Quotient
Above average	110 and above
Average	90 - 109
Below average	below 90

Similarly, three reading ability subgroups which cut across the major grouping lines were established on the basis of standard scores. The limits of these subgroups were as follows:

Groups	Limits
Above average	one-half grade or more above grade level
Average	one-half grade below to one-half grade above grade level
Below average	more than one-half grade below grade level

The composition of the sample population by intelligence groups, reading groups, and sex was as described in Table 1.

TABLE 1
COMPOSITION OF GROUPS

Groups	Total	Control Group	Experimental Group
<u>I.Q.</u>			
Above Average	339	169	170
Average	206	103	103
Below Average	25	12	13
	570	284	286
<u>Reading</u>			
Above Average	348	178	170
Average	109	56	53
Below Average	113	50	63
	570	284	286
<u>Sex</u>			
Male	296	148	148
Female	274	136	138
	570	284	286

Treatment of the Data

At the conclusion of the experimental period, the data for the 570 students who made up the sample population was recorded. This data consisted of the pre-test and post-test scores of each child for the two units of experimental material, the child's IQ and silent reading comprehension score from the indicated standard tests, the sex of the child, and the intelligence and reading subgroups into which each child fell.

The level of significance established for this study was at the .05 level and analysis of covariance was used to analyze each group. In all cases the experimental (listening) group was contrasted with the control (reading) group, with the pre-test score used as covariate. The following analyses of covariance were made for each of the two units (unitexts).

1. Using only the students with above average IQ
2. Using only the students with average IQ
3. Using only the students with below average IQ
4. Using only the students with above average reading ability
5. Using only the students with average reading ability
6. Using only the students with below average reading ability
7. Using only the male students
8. Using only the female students.

Findings and Discussion

For each of the analyses relating to intelligence level, reading ability, and sex an F Statistic was established which had to be equalled or exceeded for a significant difference to exist due to instructional method. The majority of relationships showed no significant difference in the effectiveness of reading and listening as techniques of instruction. Areas in which a significant difference was found were as follows:

1. Children of above average intelligence learn more by reading than by listening.
2. Children of high and of below average reading ability *may* learn more by reading, as the statistics favored reading as a method of instruction for one of the two units for each of these groups. However, since this was not true for both units for either of these groups, the finding is not clearcut.
3. Girls learn more by reading than by listening.

The reader may at this time be interested in the conclusions of Hampleman's study, mentioned earlier. He found listening comprehension significantly superior for both sixth and fourth grade pupils—boys and girls—and, as might be expected, that sixth grade pupils were significantly superior to fourth grade pupils in both listening and reading comprehension. He also found easy materials to be more readily comprehended than hard materials by all groups in his sample population, and that listening comprehension showed greater superiority over reading comprehension with easy material than with hard material for both age groups. When considering the boys and girls as separate groups, he found boys superior to girls in the comprehension of hard material, but no apparent difference in the ability to comprehend long and short paragraphs. Similarly, the relationship between listening and reading comprehension did not appear to be altered by the length of the passage. Most significantly, in

relationship to the study being reported in this paper, an increase in mental age, and to a lesser extent chronological age, decreased the difference between listening and reading comprehension (Hampleman, 1955, pp. 83-84). Though Hampleman found evidence for listening as the more effective learning/teaching technique, this study found some support for reading. This finding may help to explain the difference in the conclusions reached. On the basis of the study being reported, it seems reasonable to conclude that while all sixth graders do not comprehend better by reading than by listening, certain groups have completed this transition, notably the high intelligence group and the female portion of the sample population. While there was no consistent significant difference in the adjusted means in favor of the reading group in the other situations, there was no group in which there was a significant difference in favor of the listening group. This may suggest that a majority of sixth grade children have reached the point in their development where they read in order to learn considerably more than they did in the primary grades, but not to the extent that reading has become their major avenue of learning. Listening remains an important method of learning for them, and will probably remain so throughout their lives, but it is no longer *the* major way for them to learn.

There are several limitations to this study. First, the listening portion of the experimental materials consisted of tape recordings of the written material read at an appropriate rate and with the type of expression one would use in reading a storybook to children. It was believed to be a valid use of the material, but it is clear that while materials in oral and written form may be comparable, they cannot be exact duplicates without biasing the study in the direction of written language. However, in the two areas in which reading seemed to have a significant effect, the use of written material for listening purposes may not have been a serious deficit. If the remaining results are interpreted in this light, it is possible that it would be found that listening would be significantly effective for some groups and reading for others—much as is found by the classroom teacher in her informal categorization of learning styles. A repetition of this study with the oral material cast into the form of a paraphrase of the written material would be of value in supporting or revising the findings of this study.

Second, the reader should consider the fact that children have received much formal reading instruction throughout the elementary grades, but are unlikely to have received much formal listening instruction. Also, the listening ability of these children was not measured. All data regarding the individual children concerning such items was restricted to what could be obtained from their cumulative records. No record of any listening test scores was included in these records, and the investigator did not receive permission to administer a listening test to these students. Undoubtedly, such information would have added much of value to the findings of this study. It is hoped that any replication of this study would include the listening skills factor as, combined with the factors of intelligence, reading ability, and sex, this variable would allow many additional interesting comparisons to be made.

Overall, the study presents several considerations to the elementary classroom teacher. Since reading presently does seem to be a more effective learning tool for at least a defined portion of sixth grade children, teachers

should make rather extensive use of it in their social studies instruction. The high intelligence children and the girls in the classroom are more likely to profit from this method of instruction, and may prefer it. Children with other levels of intelligence and reading ability may also use reading effectively—especially if care is taken to provide needed instruction as indicated above—but the teacher will need to include alternate instructional methods and materials, accompanied by appropriate direct instruction in the skills needed to use them effectively.

Since this study showed no significant difference in the effectiveness of reading and listening at this level for most of the groups represented in the study, attention should be given to providing a solid program of instruction in listening skills. Children originally gained most of their knowledge in this fashion, and should be given the opportunity to consciously increase their listening skills. Careful, direct instruction on specific listening skills, similar to what is routinely supplied in reading instruction, is of great importance to the individual who spends his life in a world largely tuned to listening both during his school years and throughout his life. Though much of his formal education will be through printed material, a significant portion of it will be presented orally; the working world of a large segment of the population rests only lightly on the written word. Children should not be penalized by being denied instruction in a mode of learning which will offer them another way to learn effectively. In recent years increasing attention has been given to developing useful tests of listening skills and instructional programs. A planned program of listening instruction should exist in every school.

There is much in this study which raises more questions than it answers. It should be replicated upon a basis which recognizes and takes into account the factors which have operated as a deficit in this study. Additional factors which might be considered in replication are:

1. conducting the study in areas of high or low educational opportunity and/or in areas of high or low economic status,
2. drawing the sample population from more than two school systems and from a variety of geographical areas, and
3. administering intelligence, silent reading, and listening tests to the sample population immediately prior to conducting the experimental part of the study.

The most important generalization the classroom teacher may draw from this study is that there are methods of instruction which are especially effective with specific children, and that the teacher can identify these children and the technique of instruction likely to be most effective with them. It is evident that more than one method of instruction should be used in the classroom, and that a combination of methods of instruction with such aids as pictures, films, television, etc., will likely prove to be more effective than any one technique used exclusively with all students. However, knowledge of what technique to use with which child is of great value when planning the educational experiences of children. With the increasing complexity of today's education, all information which adds to the teacher's insight in this area is of benefit to her and to the students for which she has educational responsibility.

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CONTENTS OF NUMBER 13, MAY 1975

Articles on

The impact of social science on flows from school to university

Objective test analysis: some criteria for item selection

The satisfaction of university staff and their teaching

Syllabus-bound and syllabus-free orientations in a technological university

Some thoughts on norm-referenced and criterion-referenced measures

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